

*Intelligent system
solutions for structural
engineering.*

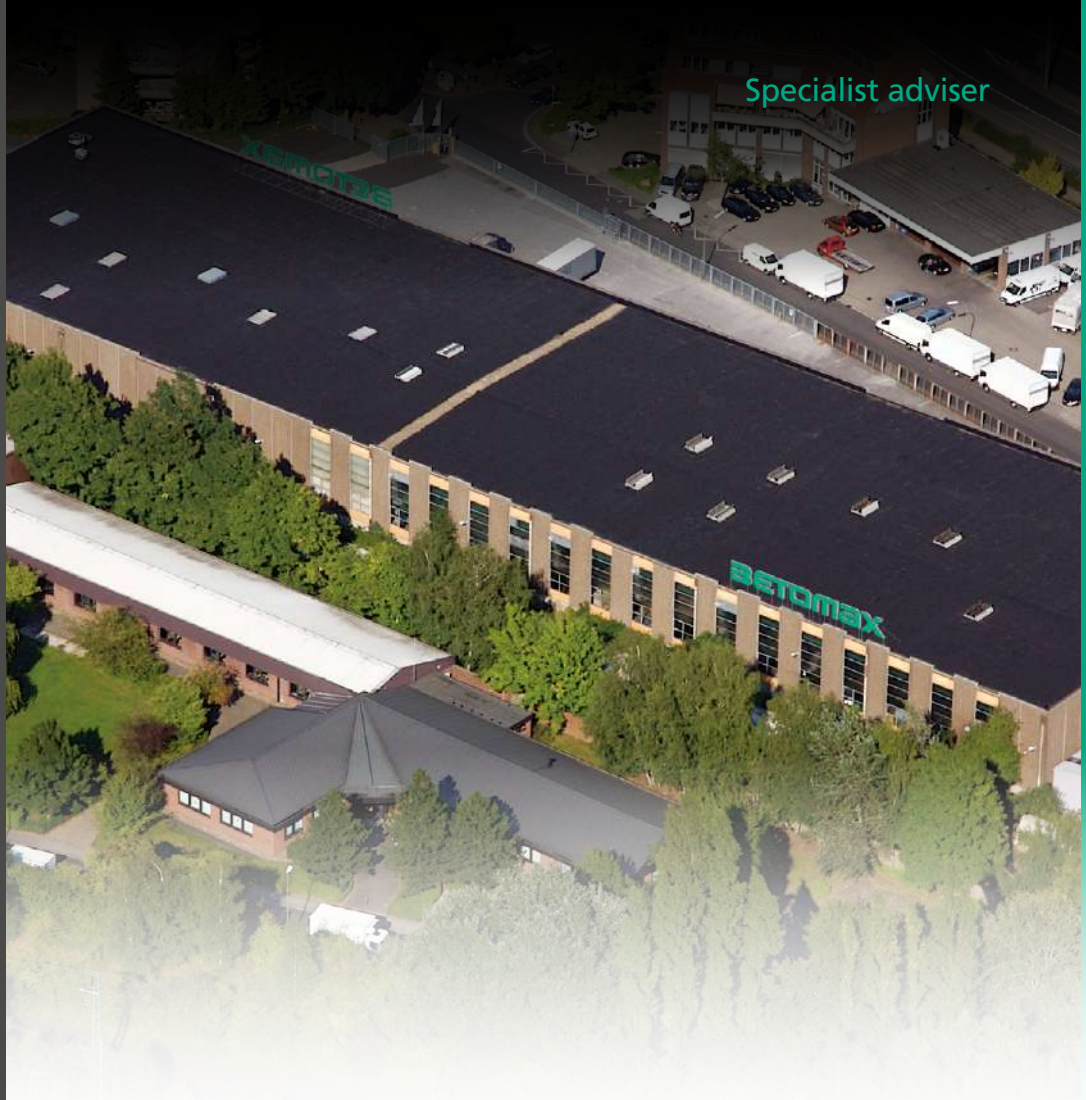
2019

When it matters...

systems
BETOMAX®

Reliability, competence as well as kindness and empathy are characteristic features of extraordinary services. Since service shall create one thing: Satisfaction. And this basically satisfying is therefore not enough. Service must always do everything until achieving the optimal solution for the customer.

If you cannot find the ideal solution at a glance while browsing through our range of products please do not hesitate to contact your specialist advisers. We will be glad to assist you !



Specialist adviser



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BETOMAX®
systems
GmbH & Co. KG

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Tie rods

Counter plates

Sealing devices

Water stops

Cones

Single-sided tie technology



When it matters...

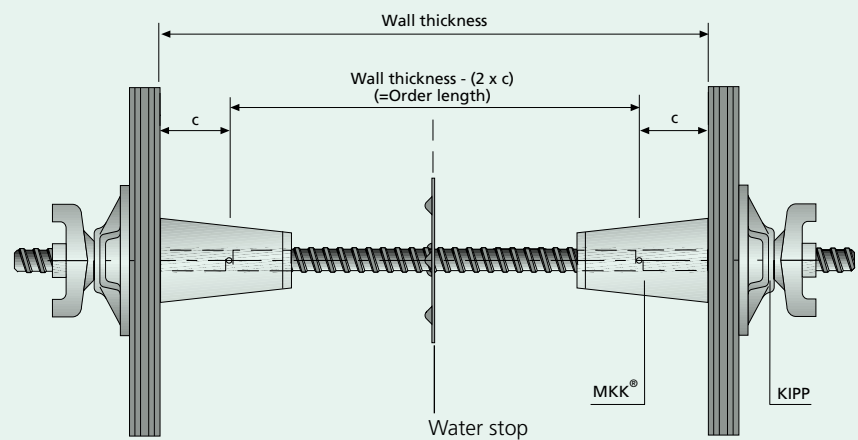
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systems
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Applications, properties, benefits

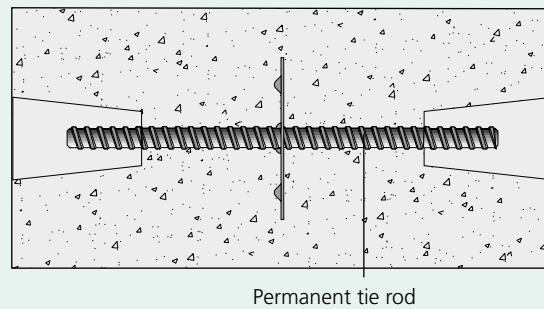
BETOMAX® tie rods – The all-purpose solution for modern shuttering:

- Depending on the type, BETOMAX® tie rods have working loads up to 240 kN
- Weldable (see *data sheet for welding conditions*)
- Load limit for accessories according to *DIN 18216*
- The full thread makes BETOMAX® tie rods especially resistant to vibrations
- BETOMAX® - tie rods can be bent (e.g. loops, round and angle hooks, pigtail anchors)
- BETOMAX® - tie rods are compatible with *Uni-system accessories 15 / 20 / 26.5*

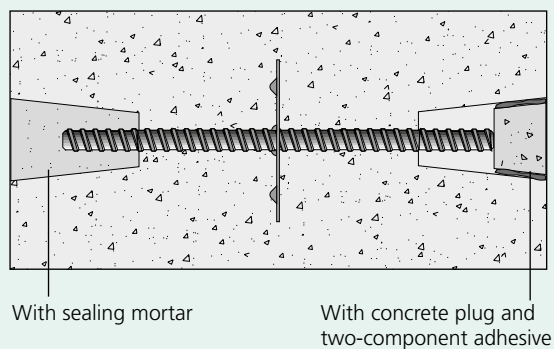
Tie rod installed



Tie rod after removal of shuttering



After closing conical holes



BETOMAX® 15

Approved by German building authority No. Z-12.5-82

Weldable and bendable tie rod fully threaded.

Compatible with all accessories of the *Uni 15 system*.

On request these tie rods can be supplied in special cut lengths, even in galvanized version.

Tie rods in stainless steel (grade 1.4404/TP 3161), article 18554404, are also available ex stock.



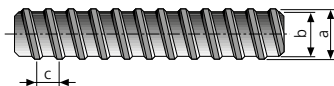
Item No.	Length cm/m	Packing unit	Weight kg/piece
18550200	20.00 cm	piece	0.310
18550250	25.00 cm	piece	0.390
18550300	30.00 cm	piece	0.470
18550350	35.00 cm	piece	0.540
18550400	40.00 cm	piece	0.620
18550500	50.00 cm	10 pieces/bundle	0.780
18550750	75.00 cm	10 pieces/bundle	1.160
18550850	85.00 cm	10 pieces/bundle	1.320
18551000	1.00 m	10 pieces/bundle	1.550
18551250	1.25 m	10 pieces/bundle	1.940
18551500	1.50 m	10 pieces/bundle	2.330
18551750	1.75 m	10 pieces/bundle	2.710
18552000	2.00 m	10 pieces/bundle	3.100
18552250	2.25 m	piece	3.490
18552500	2.50 m	piece	3.890
18553200	* 3.20 m	piece	4.960
18559999	** 6.40 m	piece	9.920

* Useable length approx. 3.15 meter ** Useable length approx. 6.30 meter

BETOMAX® 20

Weldable and bendable tie rod fully threaded.

Compatible with all accessories of the *Uni 20 system*.



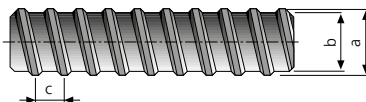
Item No.	Length m	Packing unit	Weight kg/unit
14528899	*6.35 m	piece	16.510/pc.
14528989	in special lengths + cutting surcharge	meter	2.600/m

* Useable length approx. 6.25 meter.

BETOMAX® 26.5

Weldable and bendable tie rod fully threaded.

Compatible with all accessories of the *Uni 26.5 system*.



Item No.	Length m	Packing unit	Weight kg/unit
17539999	*6.30 m	piece	28.980/pc.
17538888	in special lengths + cutting surcharge	meter	4.600/m

* Useable length approx. 6.20 meter.

Technical data

External diameter a

Core diameter b

Pitch c

Working load

Breaking load

Yield point ¹⁾

Partial safety factor for tie rod ¹⁾

Partial safety factor for acting load ¹⁾

B 15

17.0 mm

15.0 mm

10.0 mm

¹⁾

165 kN

142 kN

1.15

1.50

B 20

22.0 mm

20.0 mm

10.0 mm

150 kN

300 kN ±10%

¹⁾ Values comply with approval specification

B 26,5

30.0 mm

26.5 mm

13.0 mm

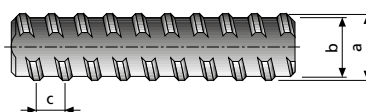
240 kN

510 kN ±10%

Uni 15* / 20

*Approved by German building authority No. Z-12.5-114

Tie rod made of **non-weldable** pre-stressed steel.
D&W system



Item No.	Bez.	Length mm	Packing unit	Weight kg/meter
20598888	Uni 15	in special lengths + cutting surcharge	meter	1.440
22538888	Uni 20	in special lengths + cutting surcharge	meter	2.500

Technical data

External diameter a

Core diameter b

Pitch c

Working load

Breaking load

Uni 15

17.0 mm

15.0 mm

10.0 mm

90 kN

190 kN

Uni 20

22.0 mm

20.0 mm

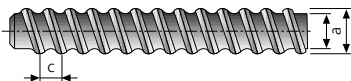
10.0 mm

160 kN

340 kN

KO 10 bars, rope threaded

- Made of hot-rolled round steel
- Chemical composition as to structural steel BSt 500
- The full thread ensures a high wear resistance
- Good welding properties



Item No.	Length m	Packing unit	Weight kg/meter
11509999	*6.10 m	piece	0.500
11508899	in special lengths + cutting surcharge	meter	0.500

* Useable length approx. 6.00 meter

Technical data

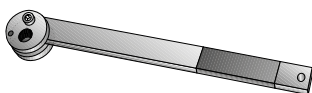
External diameter a
Core diameter b
Pitch c
Working load
Breaking load
Mandrel Diameter

KO 10

9.6 mm
8.1 mm
4.0 mm
15 kN
32 kN
90.0 mm

Pin wrench

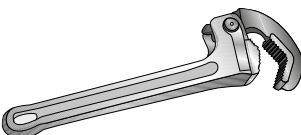
For inserting and removing tie rods.



Item No.	for tie rods type	Packing unit	Weight kg/piece
90200400	BETOMAX® B 15	1 piece	1.640

Universal turning wrench

Ratchet spanner with hook jaw.
For inserting and removing tie rods, spring-loaded.

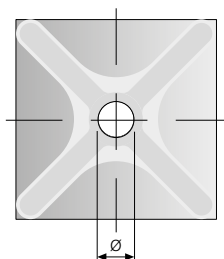
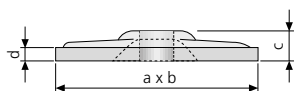


Item No.	for tie rods type	Packing unit	Weight kg/piece
90200440	B 15/B 20/B 26.5 Ø max. 37.5 mm	1 piece	0.760
90200442	B 15/B 20/B 26.5 Ø max. 50 mm	1 piece	1.600

Spare parts on request.

Counter plate

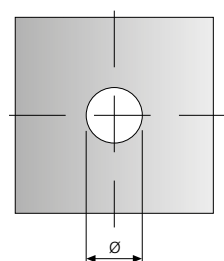
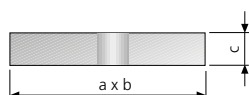
Pressed and galvanized.



Item No.	Hole Ø mm	Plate size a x b x c x d mm	Packing unit	Weight kg/piece
11011092	12	110x110x20x 5	10 pieces/bundle	0.450

Counter plate

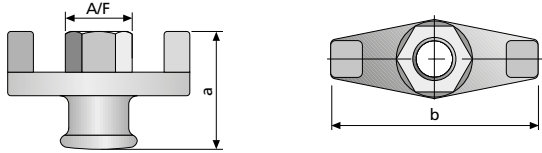
Smooth type, galvanized.



Item No.	Hole Ø mm	Plate size a x b x c mm	Packing unit	Weight kg/piece
10121210	20	120x120x15	10 pieces/bundle	2.150
10121225	25	120x120x20	10 pieces/bundle	2.200
10121234	34	120x120x20	10 pieces/bundle	2.100

Wing nut

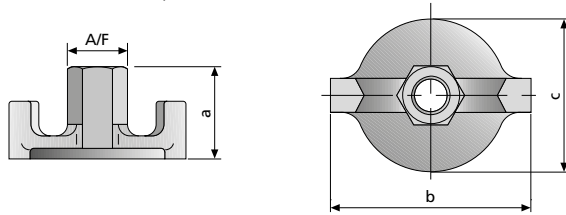
Compatible with *Uni 15* and *20*, galvanized.



Item No.	Thread	Dimension a x b mm	A/F mm	Packing unit pieces/bag	Weight kg/piece
20472000	B 15	55/85	27	50	0.325
14473000	B 20	60/110	36	25	0.650

Special wing nut Ø 70

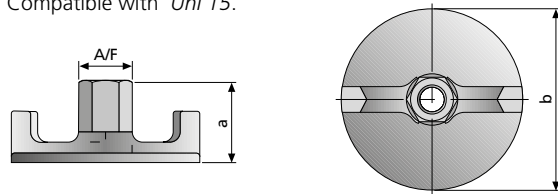
Galvanized. Compatible with *Uni 15*.



Item No.	Thread	Dimension a x b x c mm	A/F mm	Packing unit pieces/bag	Weight kg/piece
20480700	B 15	50x95x70	27	50	0.410

Special wing nut Ø 110

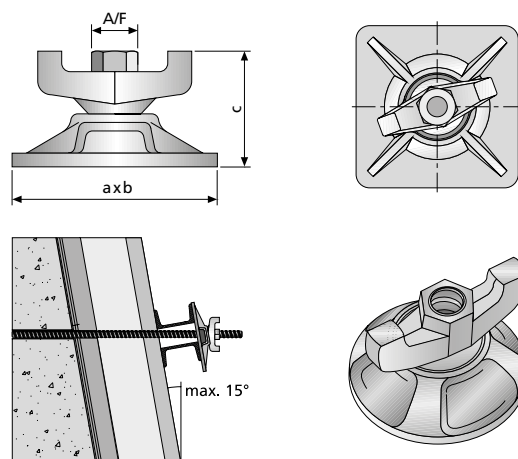
Galvanized casting with drilled thread.
Compatible with *Uni 15*.



Item No.	Thread	Dimension a x b mm	A/F mm	Packing unit pieces/bag	Weight kg/piece
20481100	B 15	50x110	27	25	0.900

KIPP

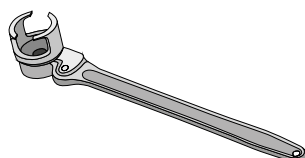
Galvanized ball-and-socket plate. For sloping formwork.
Compatible with *Uni 15*.



Item No.	Thread	Dimension a x b x c mm	A/F mm	Packing unit pieces/bag	Weight kg/piece
20021230	B 15	120x120x66	27	10	1.206
20021350	B 15	135x185x66	27	10	1.679
20020950	B 15 with hex nut	Ø 94x53	41	1	0.680
20020940	B 15 with wing nut	Ø 94x61	27	1	0.765

Wing nut spanner

Secure and functional tool.
The Risk of injury is practically eliminated.

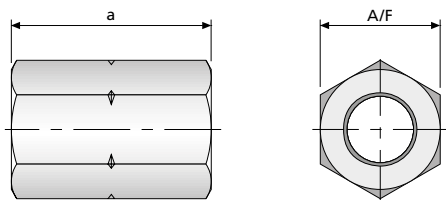


Item No.	for wing nuts	Packing unit piece	Weight kg/piece
91218200	B 15	1	2.500

Hex nut

Made of machining steel. Compatible with *Uni rods*.
Not usable for styrene!

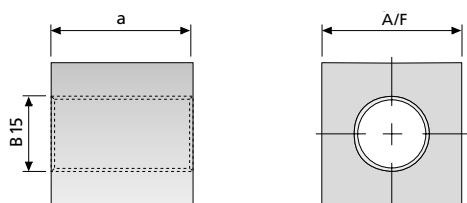
Weldable, quality S 355 (St 52-3) on request.
Only usable as locknut.



Item No.	Thread	Height		A/F	Packing	Weight
		a	mm	mm	unit	kg/piece
					pieces/bag	
20430100	B 15	50	30		100	0.210
20440230	B 15	25	30		250	0.105
14430400	B 20	60	36		50	0.260
21430800	B 26.5	80	46		25	0.720
11430700	KO 10	20	17		100	0.130

Square nut

In material grade S355 (St 52-3), weldable.
Compatible with *Uni rods*.

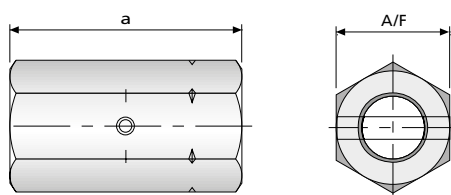


Item No.	Thread	Height		A/F	Packing	Weight
		a	mm	mm	unit	kg/piece
					pieces/bag	
20440400	B 15	30	30		100	0.130

Coupling nut

Made of machining steel, with stop pin, for extending tie rods.
Compatible with *Uni rods*. Not usable for styrene!

Weldable, quality S 355 (St 52-3) on request.

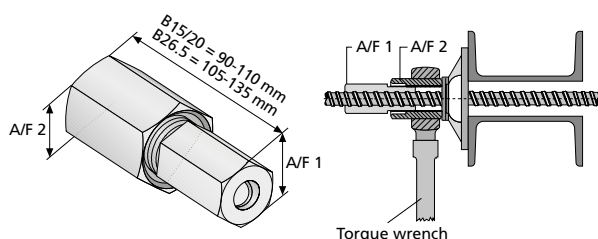


Item No.	Thread	Height		A/F	Packing	Weight
		a	mm	mm	unit	kg/piece
					pieces/bag	
20450100	B 15	105	30		50	0.450
14450800	B 20	110	36		25	0.635
21450700	B 26.5	150	46		10	1.430

Pre-tensioning nut

Made of machining steel. Galvanized an with a fine thread
for the pre-tention process. Compatible with *Uni rods*.

Please observe the maximum indicated lengths in the sketch!

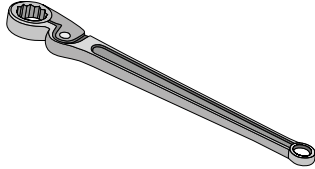


Item No.	Designation	A/F 1	A/F 2	Packing	Weight
		mm	mm	unit	kg/piece
				piece	
20451820	Pre-tensioning nut B 15	30	41	1	0.670
14451120	Pre-tensioning nut B 20	36	46	1	0.780
21451260	Pre-tensioning nut B 26.5	46	60	1	1.600

Pre-tensioning force					
Torque settings	10 kN	30 kN	50 kN	70 kN	90 kN
B 15	55 Nm	170 Nm	280 Nm	400 Nm	520 Nm
B 20	58 Nm	180 Nm	300 Nm	413 Nm	533 Nm
B 26,5	65 Nm	185 Nm	315 Nm	445 Nm	575 Nm

Ratchet spanner

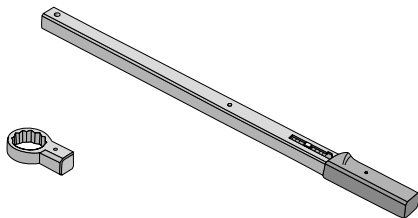
For hex nuts and coupling nuts.



Item No.	A/F mm	Packing unit piece	Weight kg/piece
91024500	24	1	0.500
91027400	27	1	0.500
91030500	30	1	0.810
91036300	36	1	1.270
91046900	46	1	2.400

Torque wrench

Torque wrench for variable torque settings
(see table *Pre-tensioning nut*).

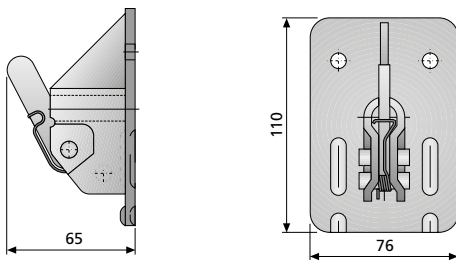


Item No.	Designation	Packing unit piece	Weight kg/piece
91145200	Torque wrench 200 Nm	1	1.440
91147240	Torque wrench 400 Nm	1	1.580
91149270	Torque wrench insert A/F 27	1	0.180
91149300	Torque wrench insert A/F 30	1	0.220
91149410	Torque wrench insert A/F 41	1	0.260

Inserts for A/F 46 and 60 available on request.

Tension jack

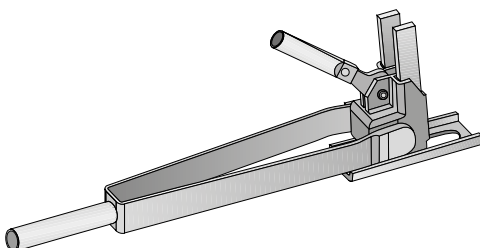
Reinforced, galvanized, with spring.
For tension wire from 5 to 10 mm.
Maximum load 10 kN for Ø 10 mm according to DIN 18216.



Item No.	Designation	Packing unit	Weight kg/piece
27301100	Tension jack	50 pcs./bag	0.470

Tension lever

Tension lever for tension jack.



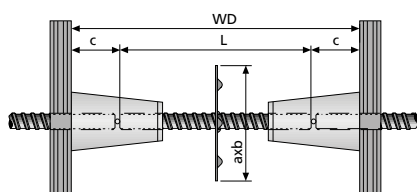
Item No.	Designation	Packing unit piece	Weight kg/piece
27311700	Tension lever	1	3.430

BETOMAX® - Water stops – Applications, properties, benefits

- Square water stops 120 x 120 mm and round water stops Ø 120 mm offer best protection against leakage of water.
- Molded round water-stop plate, 120 mm diameter, ensures greatest possible protection against lateral infiltration of water.
- Square water stops with cams improve the adhesion of concrete and guarantee a better protection against anti rotation.
- Water stop with studs improves bonding with concrete and resistance to torsional stress. Compliance with striking time is essential.
- Conical holes can be closed with mortar or a concrete plug when the cone is removed.
- In conjunction with *Cone EX* the concrete cover is 25, 35 or 50 mm.
- In use with *MKK® B15* the concrete cover is 50 mm

Water stop, welded on Inspection report

The square water stop 120 x 120 mm offers best protection against leakage of water. The cams improve the adhesion of concrete.



Item No.	Thread	Plate size a x b mm	Packing unit piece	Weight kg/piece
10291812	B 15	120x120	1	0.320
10291412	B 20	120x120	1	0.320
10291712	B 26.5	120x120	1	0.320

Length of tie rod: $L = WD - 2c$

Cut lengths need to be ordered separately.

Water stop B 15 square, Water stop B 15 round

Compatible with *Uni 15*. The construction of these special water stops facilitate the setting in concrete. The square water stop with cams improve the adhesion of concrete.

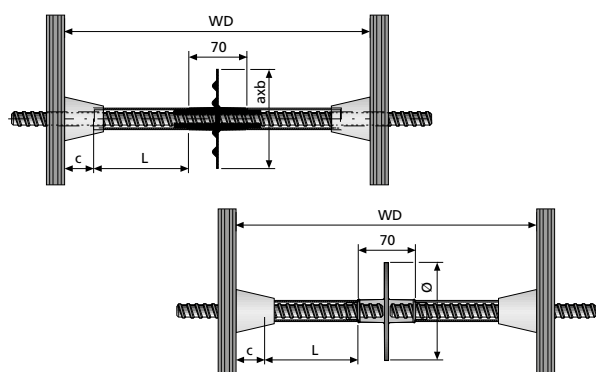
Item No.	Thread	Plate size a x b / Ø mm	Packing unit pieces/bag	Weight kg/piece
20458400	B 15 square	120x120	30	0.600
20458420	B 15 round	120	25	0.712
20458722	Reducing adapter		250	0.011
20458109	Sleeve for water stop B 15		25	0.525

Length of tie rod:

$$L_{K-26} = \frac{WD - 2c - 70}{2}$$

Length of tie rod with transition
coupler and K 22 or FB 22:

$$L_{K-22/FB22} = \frac{WD - 2c - 125}{2}$$



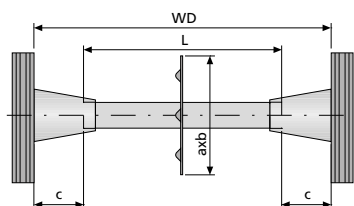
Water stop St 22, welded on Dist St 22 Inspection report

Best protection against leakage of water. By means of plug *FLUPP®* the steel tube can be closed waterproofly. In conjunction with *Cone EX* the concrete cover is 35 or 50 mm. Once the cone is removed, the conical hole has to be closed with mortar or a concrete plug.

Item No.	Plate size a x b mm	Packing unit piece	Weight kg/piece
10290311	120x120	1	0.320

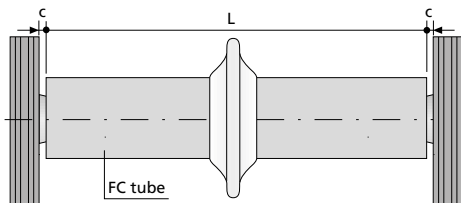
Length of tie rod: $L = WD - 2c$

Special lengths need to be ordered separately
(see **Tubular spreader technology**).



SD - water stop

This self-sealing (SD) water stop reliably offers protection against leakage of water. Necessary accessory for it: **BETOMAX® SD** mounting plier.



- New type of sealing ring on synthetic elastomer basis
- Automatic swelling responds to moisture and wetness
- Designed specifically for sealing purposes
- Universally applicable with fibre-reinforced concrete, steel distance tubes and plastic tubes with diameters ranging from 22 to 40 mm
- Simple installation and reliable handling with the special **BETOMAX® SD** mounting plier

Art.-Nr	Designation	Ø inside/outside mm	Packing unit	Weight kg/unit
61922888	Fibre concrete spacer tube 22, cut length	22/40	piece	1.760
63122130	Plastic spacer tube K-22 rough, cut length	22/26	meter	0.210
63126190	Plastic spacer tube K-26 rough, cut length	26/30	meter	0.240
63132190	Plastic spacer tube K-32 rough cut length	32/36	meter	0.285
62022150	Steel spacer tube St-22, cut length	24.8/26	meter	0.378
61822381	O-ring self-sealing (SD) for Dist K-22 till Dist K-32		piece	0.017
61822382	O-ring self-sealing (SD), larger version, for round tube 22, fibre concrete		piece	0.025
61822400	Accessory: mounting plier		piece	0.313

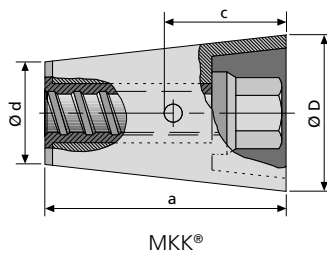
Calculation of tube cut length Dist (L): $L = WD - 2c$

Cut length of tube must be ordered separately.

MKK®

Metal-plastic cone for multiple use in concrete. Compatible with *Uni-rods*.

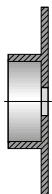
Application: see e.g. **water stop, welded on**



MKK® cap for flush sealing of the **MKK®** on the formwork.
MKK® sealing cap for sealing the **MKK®** on rough surfaces with tilt adjustment up to 3°.

Dimensions MKK®:

	a mm	Ø D mm	Ø d mm	c mm	A/F mm
B 15	95	61	40	50	27
B 20	126	70	42	65	32
B 26.5	135	103	57	70	46



MKK®-cap

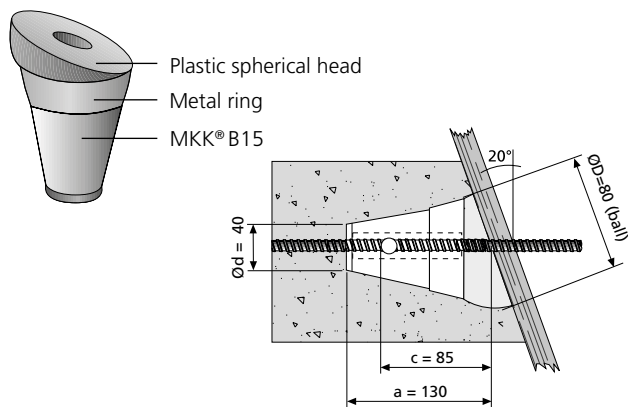


MKK®-sealing cap

Closing of the conical holes with **BETOMAX® sealing mortar**, the special sealing mortar or concrete plugs with two-component adhesive (see **Building materials technology**).

MKK® Vario B 15

The MKK® Vario consists of a galvanized metal ring and a plastic spherical head. Due to its angle compensation of 20° the MKK® Vario can be used freely adjustable.



Item No.	Designation	Packing unit pieces	Weight kg/piece
18403000	MKK® Vario B 15	1	0.810
18403100	Vario B 15 angle compensation	10	0.300

Assembly:

The MKK® Vario B15, carrying the ring, is placed in the shuttering. The angle compensation is placed on the tie rod and forced into the ring with the aid of the shuttering.

Applications:

Curvatures, e.g. tunnel entrances and coves,
e.g. at base/wall transition of clarifiers.

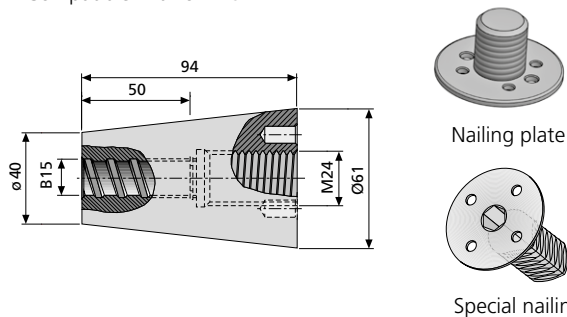
Length of the rod cut-to-size: $L = WD - 2c$

SKK®

The SKK® BETOMAX® 15 steel climbing cone is used in conjunction with the BETOMAX® 15 tie rod and a M 24 threaded bolt. It is used wherever the MKK® B 15 is selected as the positioning cone.

The SKK® is tightened and released with the special SKK® spanner.

Compatible with Uni 15.

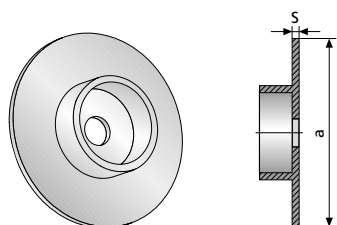


Item No.	Designation	Packing unit pieces/bag	Weight kg/piece
18405400	SKK® BETOMAX®15	10	1.250
18469300	Nailing plate M 24, galvanized	50	0.093
18469320*	Special nailing plate M 24, galvanized	50	0.100

*For facilitating the removal.

Cap for MKK®

Prevents penetration of concrete into the MKK®.



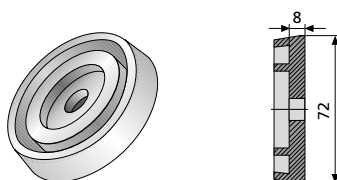
Item No.	for MKK®	Packing unit pieces/bag	Weight kg/piece
18409100	B 15	50	0.005
14409200	B 20	50	0.006
21409300	B 26.5	50	0.015

Dimensions of caps for MKK®:

	a	s
B 15	63	1.0
B 20	68	1.5
B 26.5	103	2.0

MKK® - sealing cap B15

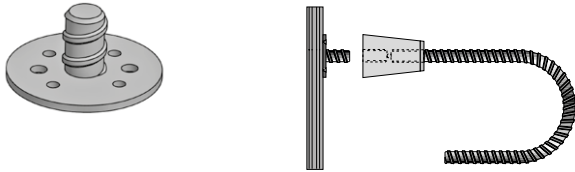
For sealing the MKK® on rough surfaces
with angle compensation up to 3°.



Item No.	for MKK®	Packing unit pieces/bag	Weight kg/piece
18409300	B15	50	0.045

Nailing plate for MKK®

For securing the MKK® BETOMAX® 15, for example, when used as a positioning cone. The nailing plate is fixed onto the formwork.



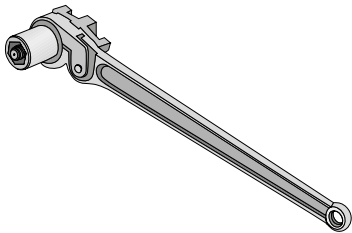
Item No.	Designation	Packing unit pieces/bag	Weight kg/piece
20469300	B 15	50	0.100
14469300	B 20	25	0.190
17651000	B 26.5	25	0.200

Dimensions nailable plate:

	a	b	S
B 15	58	25	3
B 20	70	27	3
B 26.5	100	27	3

Special MKK® spanner

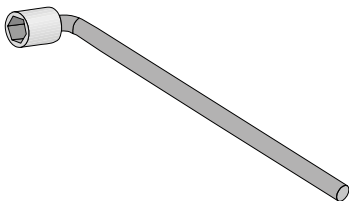
For removing the MKK®. Functional and secure tool which avoids tilting and slipping.



Item No.	for MKK®	Packing unit piece	Weight kg/piece
90418000	B 15	1	2.450
90414600	B 20	1	2.860
90420400	B 26.5	1	7.320

MKK® spanner

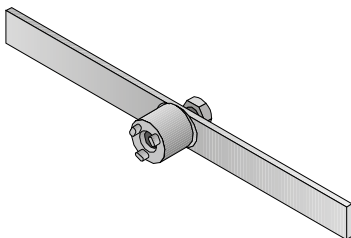
An inexpensive alternative for turning out the MKK® instead of the special MKK® spanner.



Item No.	for MKK®	A/F mm	Packing unit	Weight kg/piece piece
90227100	B 15	27	1	1.150
90230200	B 20	32	1	1.620

Special SKK® spanner

For turning out the SKK®

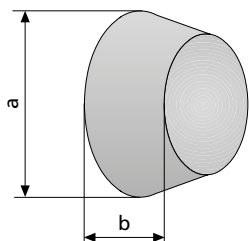


Item No.	for SKK®	Packing unit piece	Weight kg/piece
91318000	B 15	1	4.200

Concrete plug for MKK®

Inspection report

For closing conical holes. Glued in with *two component adhesive*.
1 kg of adhesive is sufficient for approx. 40 B 15 plugs.



Item No.	for MKK®	Dimension a / b mm	Packing unit pieces/bag	Weight kg/piece
18392015	B 15	60 / 49	75	0.240
14392020	B 20	67 / 50	60	0.337

Two component adhesive

Inspection report

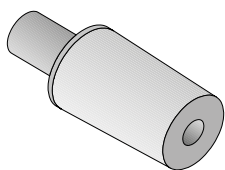
On an epoxy resin basis. For making tie points impermeable to water by means of concrete plugs. The components are colour-coded: component A is white, component B black.
Mixing ratio 1:1, reaction temperature 50-60°C



Item No.	for MKK®	Packing unit	Weight kg/compo- nents A+B
61800200	Two component adhesive	1 pot each A+B	2x1.500
61800300	Two component adhesive	Twin cartridge A+B	0.820
61800310	Two comp. injection gun	each	1.220

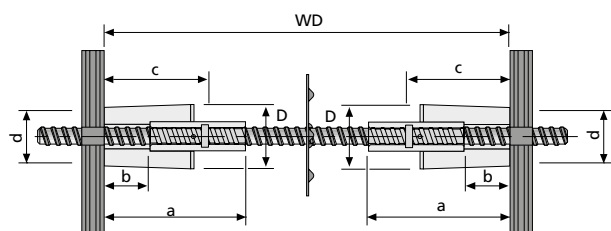
SBK® / CBK®

Steel-concrete cone, remains in concrete.
Flush closing with *Fibre concrete plug 22/20*.
Compatible with *Uni 15*.



Item No.	Thread	Working Load	Packing unit pieces/bag	Weight kg/piece
SBK®				
20425000	B 15	90 kN	40	0.560
CBK®				
20426500	B 15	75 kN	50	0.260

Dimensions SBK®/CBK®:

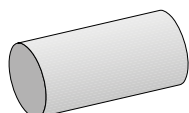


	a	b	c	D	d
SBK® B 15	136	50	100	52	52
CBK® B 15	108	34	75	52	52

Length of the non-recoverable tie rod = $WD - 2c$

Fibre concrete plug

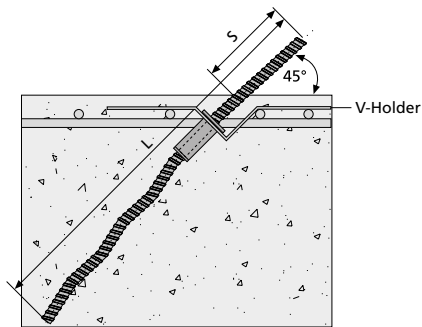
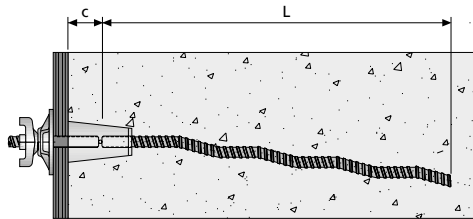
For flush sealing of impermeable to water after use of the *Two component adhesive*.



Item No.	Ø mm	Length mm	Packing unit pieces/bag	Weight kg/1000 pcs.
61800320	22	20 (CBK®)	1000	14.000
61800350	22	50 (SBK®)	500	35.000

Pigtail anchor

- Made of weldable and bendable **BETOMAX®** tie rods B 15, B 20 and B 26.5
- For single-sided tying in concrete
- For use as non-recoverable tie rod
- Also for use in conjunction with cones, e.g. for climbing formwork



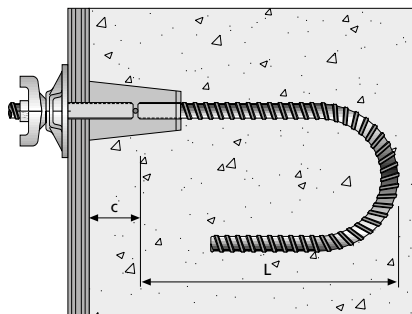
Art. -Nr.	Thread	Packing unit pieces/bundle	Weight kg/piece
18560550	B 15	10	0.852
14560590	B 20	5	1.820
17560600	B 26.5	1	4.600

Dimensions pigtail anchor:

	L	c	S
B 15	550	50	70
B 20	700	65	80
B 26.5	800	70	100

Hook anchor

- Made of weldable and bendable **BETOMAX®** tie rods B 15, B 20 and B 26.5
- Same applications as *pigtail anchor*, but also for smaller wall thicknesses



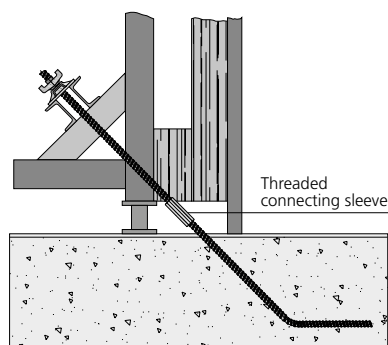
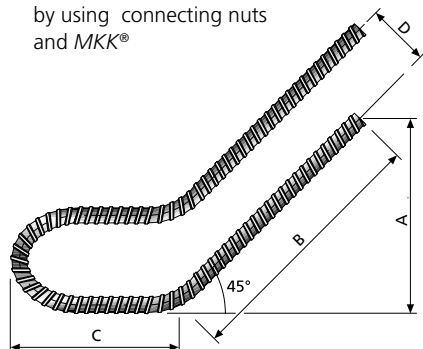
Item No.	Thread	Packing unit pieces/bag	Weight kg/piece
18570250	B 15	25	0.670
18570450	B 15	1	0.980
14570500	B 20	1	2.250
17570650	B 26.5	1	4.630

Dimensions hook anchor:

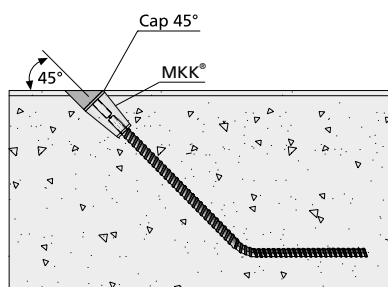
	L	c
B 15	250	50
B 15	450	50
B 20	500	65
B 26.5	650	70

Loop anchor

- Made of weldable and bendable **BETOMAX**® tie rods B 15, B 20 and B 26.5
- This article is perfect for anchoring support frames and single-sided formwork
- The *loop anchor* is put into the paving slab during the first casting section
- This anchor can be extended by using connecting nuts and **MKK**®



Loop anchor with connecting nut



Loop anchor with **MKK**® and cap 45°

Item No.	Thread	Packing unit piece	Weight kg/piece
18581750	B 15	1	2.710
14581530	B 20	1	3.900
17581620	B 26.5	1	9.200

Load numbers

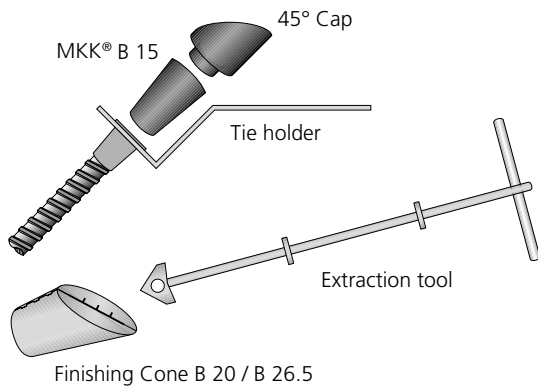
(referring to one branch):

Working loads	Breaking loads	Thread	A	B	C	D
85 kN	160 kN	B 15	30	40	30	23
150 kN	300 kN	B 20	30	40	30	28
245 kN	520 kN	B 26,5	34	45	45	30

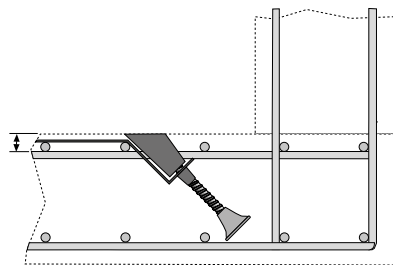
Finishing Cone B 15 / B 20 / B 26.5

The finishing cone for the perfect concrete surface.

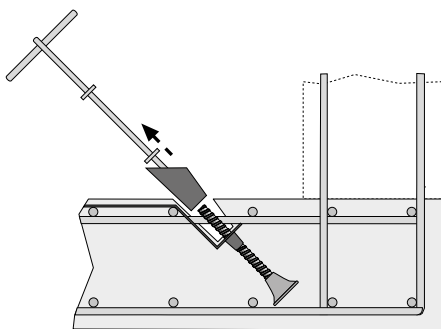
Example:



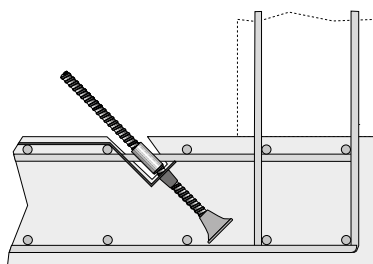
Installation and removal Finishing Cone B 20 / B 26.5:



Installation



Removal of the cone



Connected tie rod

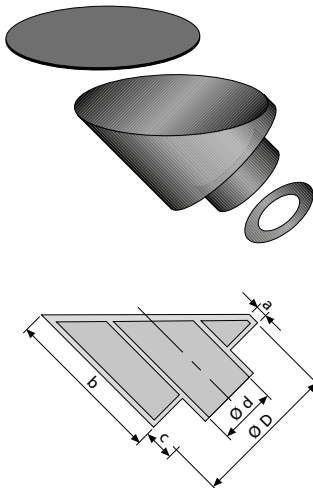
Item No.	Designation	Packing unit pieces	Weight kg/piece
18402000	MKK Betomax 15	25	0.500
18409145	MKK Cap 45° B 15	50	0.040
18409146	Sealing washer for MKK® angle compensation	100	0.001
18581200	Tie holder B1 5	40	0.500
14409245	Finishing Cone B 20 45°	40	0.090
14581200	Tie holder B 20 45°	40	0.500
21409245	Finishing Cone B 26.5 45°	40	0.090
17581200	Tie holder B 26.5 45°	40	0.500
90414500	Extraction tool	1	0.320

Features, properties:

- Recessed installation of the lost tie rod
- Cone can be fitted at precisely 45°
- Perfect installation flush with the surface
- Cone can be easily removed with the help of the *Extraction tool* (for B 20 and B 26.5)
- A connecting nut can be easily fitted once the cone has been removed
- With the aid of *BETOMAX® sealing mortar* the opening can be closed
- *MKK® sealing cap 45° B 15* is used for the perfect fixture of *MKK® B 15*
- The insertion is possible without additional coupling nut
- Disassembly of the *sealing cap* works without any special tool (only a carpenter's hammer is needed)
- If requested an additional compensation washer is available

45° cap B15

Made of plastic. For use with MKK®.
For inclined installations.



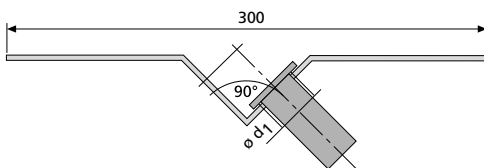
Item No.	Designation	Packing unit pieces	Weight kg/piece
18409145	45° cap B 15	50	0.040
18409146	Sealing washer for MKK® angle compensation	100	0.001
18409148	Compensation washer 90 x 60 x 10 self-adhesive, for MKK® 45° angle compensation	100	0.010

Thread	a	b	c	Ø d	Ø D
B 15	5	70	14	30	65

V Holder

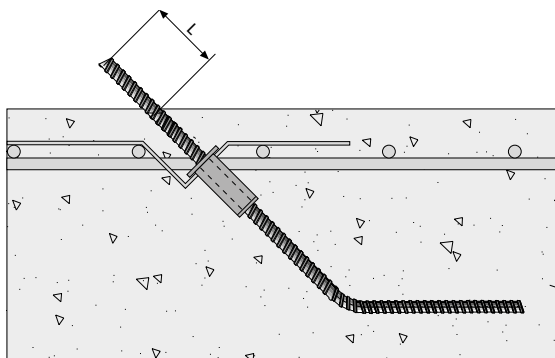
Special construction made of a metal strip fixed to a plastic sleeve.
For anchoring aids for single-sided wall formwork.

For installation of *tie rods*, *loop anchors*, *pigtail anchors*,
or *hook anchors* etc. at 45°.



Item No.	Designation	Ø mm	Packing unit pieces	Weight kg/piece
18581000	V Holder B 15	15	50	0.420
14581000	V Holder B 20	20	40	0.420
17581000	V Holder B 26.5	26.5	40	0.420

Thread	Ø d _i
B 15	25
B 20	32
B 26.5	40



Thread	L
B 15	70
B 20	80
B 26.5	100

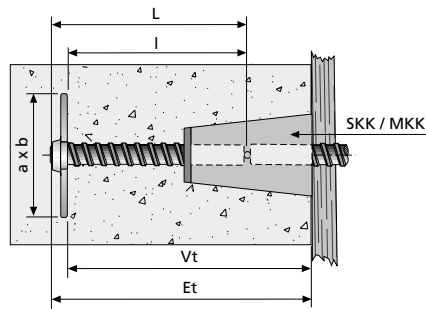
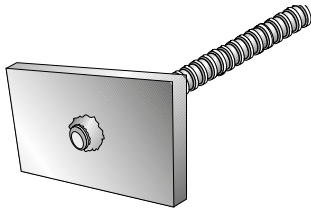
Illustrated with loop anchor
L = Projection for fastening with threaded connecting sleeve

Barrier tie rod

Inspection report

Suitable for use as a one-sided anchor.
Typically used for climbing formwork, scaffolding brackets with thin wall thickness.

Consists of bendable and weldable B 15 threaded tie rod and plate (90 x 120 x 10 mm).



Item No.	Designation	Length mm	Thread	Weight kg/piece
18901016	Barrier tie rod B 15	160	B 15	1.120
18901099	Barrier tie rod B 15	o. r.	B 15	on request

a x b	t	L	l	Vt	Et
90 x 120	10	180	160	210	230

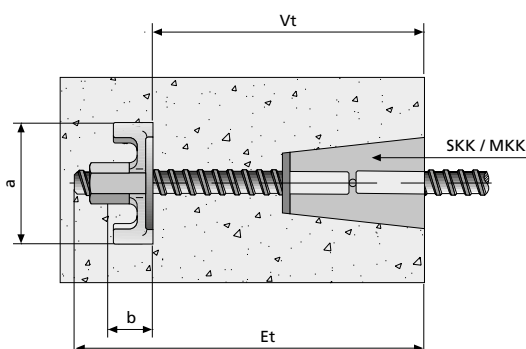
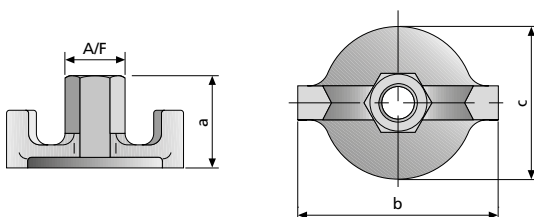
Vt = Anchoring depth

Et = Installation depth

Rod failure at max. tensile load

ROTOR

Casting for one-sided anchoring. Max. load depends on the concrete quality and installation depth (Et).
Compatible with Uni 15.



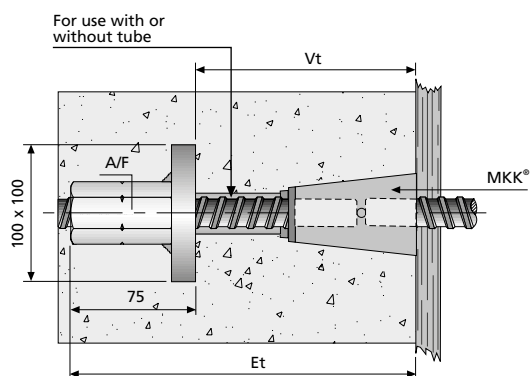
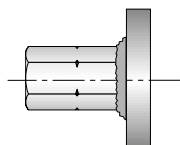
Item No.	Designation	Dim. mm a x b x c	A/F mm	Packing unit pieces/bag	Weight kg/piece
20467001	Rotor B 15	50x95x70	27	50	0.410

Concrete quality B 25
Vt = 20 cm
for 90 kN working load

End anchor B 20

Inspection report

Made of an anchor plate with welded-on B 20 hexagon nut.
For one-sided anchoring. Compatible with Uni 20.



Item No.	Designation	Packing unit piece	Weight kg/piece
14580100	End anchor B 20	1	1.560

Vt = Anchoring depth
Et = Installation depth

Anchoring depth: Vt = 175 mm
(Acc. to test certificate, failing load in concrete 177 kN and concrete quality C 20/25)

Failing load in concrete:
235 kN in uncracked concrete
177 kN / 181 kN in cracked concrete
(test cone dia. restricted to 850 mm)

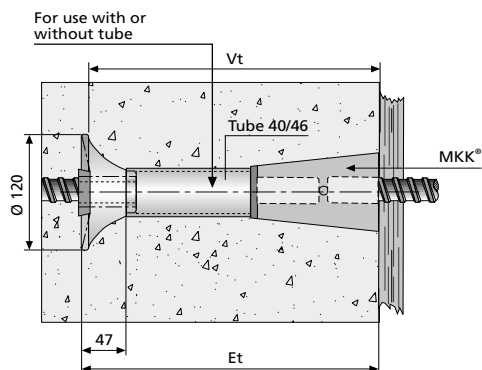
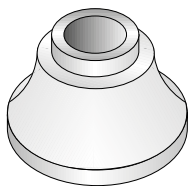
Concrete strength: 30 N / mm²

- Max. load depends on the concrete quality and anchoring depth (Vt)

End anchor B 26.5

Inspection report

Casting for one-sided anchoring.



Item No.	Designation	Packing unit piece	Weight kg/piece
17580100	End anchor B 26.5	1	1.320

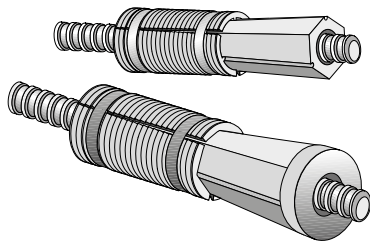
Vt = Anchoring depth
Et = Installation depth

- Max. load depends on the concrete quality and anchoring depth (Vt)

Rock anchor B 15* / B 20

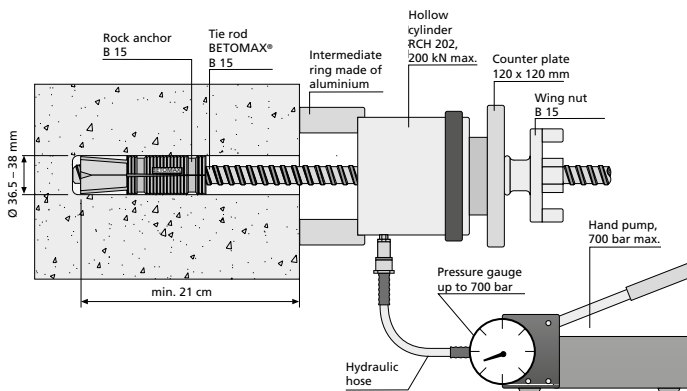
*Approved by German building authority No. Z-21.6-1827

For securing single-sided formwork in concrete or rock walls. Compatible with *Uni 15*. Also ideal for attaching *bridge edge beam brackets* to components with anchoring parts not set in concrete. Use e.g. when renovating existing buildings.



Item No.	Designation	Packing unit pieces/bag	Weight kg/piece
20491810*	Rock anchor B 15	50	0.420
14491810	Rock anchor B 20	15	1.331
20491880**	Testing device of rock anchor	1	17.800
20491812	SDS hammer drill 37 x 570 x 450 mm	1	1.700
90210120	Setting tool for rock anchor B 15	1	2.500
90210130	Setting tool for rock anchor B 20	1	6.620
90210140	Wire brush for rock anchor	1	0.153
91147240	Torque wrench 400 Nm	1	1.580

**Available for rent on request



Borehole depths / working loads:

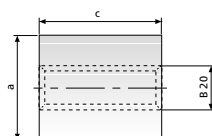
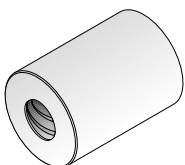
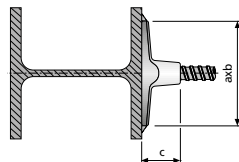
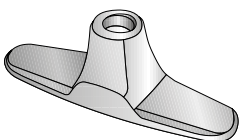
- **B 15:** Borehole using a 37 mm drill
- **B 15:** Core drilling by using a drill bit 38 mm
- **B 15:** Borehole depths and working loads as per admission
- **B 20:** Borehole by using a drill 52 mm
- **B 20:** Borehole depth: 40 cm minimum (concrete quality C20/25)
- Minimum edge distance at least 1.5 x borehole depth
- Hole spacing at least 3 x borehole depth
- Please observe installation instructions!

Please carry out a test before applying the final working load

- Proof load can be carried out with *BETOMAX® torque wrench* or with the special *BETOMAX® testing device for rock anchors*.
Kindly ask for details!

FITSCH®

Forged weld-on piece with fillet weld $a = 4$ mm. This part with drilled thread is welded all around. Steel quality: S 355 (St 52.3). Compatible with *Uni 15*.

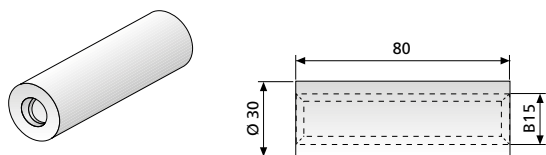


Item No.	Designation	Dimension mm $a \times b \times c$	Packing unit pieces/bag	Weight kg/piece
20198100	FITSCH® B 15	130x30x50	50	0.400
14536070	FITSCH® B 20	Ø 60 / h=70	1	1.330
21199100	FITSCH® B 26.5 (on request)	Ø 80 / h=80	1	3.410

- The weld according to *DIN 18800* has to be proved statically

Weldable sleeve B 15/80 S 355 (St52-3)

For formwork ties B 15; Compatible with Uni 15.

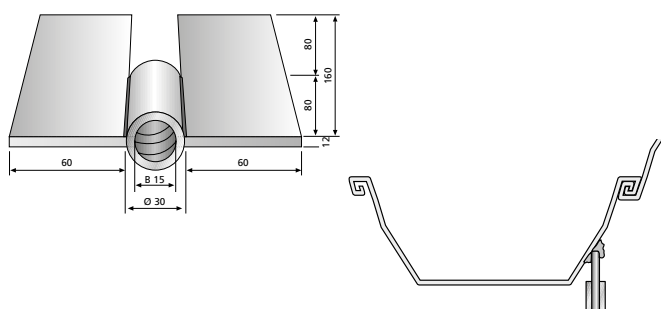


Item No.	Designation	Packing unit pieces/bag	Weight kg/piece
20198300	Weldable sleeve B 15/80 S 355 (St52-3)	50	0.300

- The weld according to *DIN 18800* has to be proved statically
- Not usable as connecting sleeve

Rocket Fitsch BETOMAX® 15

For welding onto inclined wall surfaces.
For one-sided tie points.

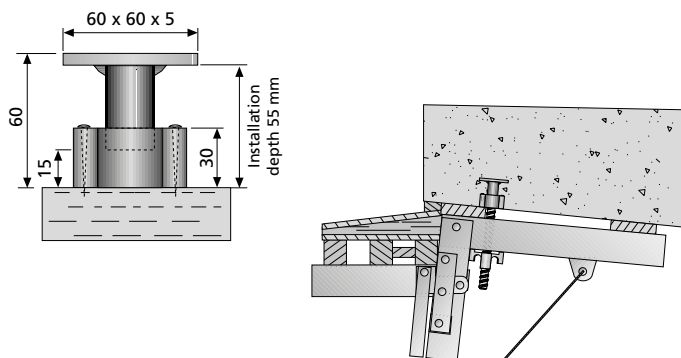


Item No.	Designation	Packing unit piece	Weight kg/piece
20198120	Rocket Fitsch B 15	1	0.980

- It is an ideal product for sheet pile walls
- The Rocket Fitsch will be placed at an angle of 90° to the formwork

Kobold® M 16

Mean for fastening, with metric thread,
Stopf 20 has to be used for closing it.

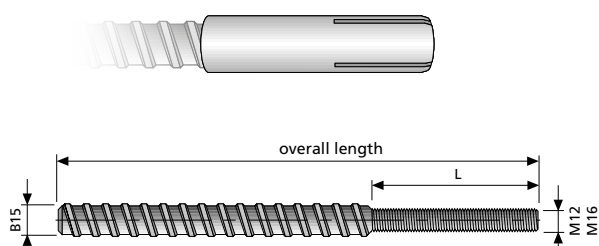


Item No.	Designation	Packing unit	Weight kg/unit
34019000	Kobold® M 16 x 60	100 pcs./bag	0.230/pc.
39070000	Stainless steel nails 55 mm	200 pcs./bag	2.600/1000 pcs.
25578888	Rod M 16/C 45 K	lin. m	1.320/lin. m
66320312	Stopf 20, Telegrey 1 (dark)	100 pcs./bag	2.370/1000 pcs.
66320314	Stopf 20, Telegrey 4 (light)	100 pcs./bag	2.370/1000 pcs.

Installation depth H = 60 mm
concrete quality C 20/25
Concrete strength 53,8 kN

Drop-in anchor B 15 / M 12 / M 16

Universally usable drop-in anchor for tie rods. By using this
kind of anchor in conjunction with concrete or hard natural
stone a temporary fixing of machines, shuttering props or
fall protection systems will be achieved.



Item No.	Designation	Packing unit piece	Weight kg/piece
20491820	Drop-in anchor B 15	1	0.153
20491822	Drop-in anchor M 12	1	0.047
20491826	Drop-in anchor M 16	1	0.109
20491830	Setting tool for drop-in anchor	1	0.424
18590610	BETOMAX® 15 / M 12	1	0.292
18590616	BETOMAX® 15 / M 16	1	0.390
20491832	Hammer drill SDS 22 x 250 x 200	1	0.349

**Loads / axial tension by application
of concrete quality C20/25**

	B15 (kN)	M12 (kN)	M16 (kN)
Design loads	19.30	7.10	10.50

Further loads / conditions of installation kindly use the BETOMAX® data sheet

CLIMAX® - anchoring sleeve
CLIMAX® Fifty - anchoring sleeve
Inspection report

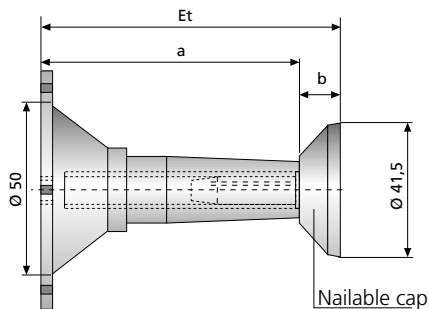
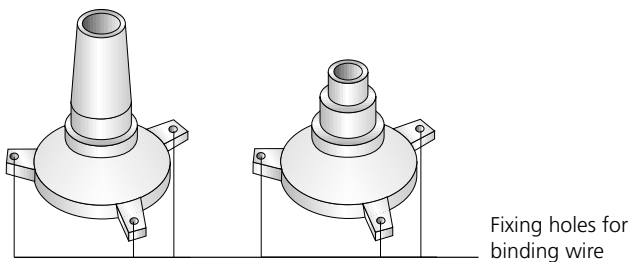
For one-sided fixing with BETOMAX® 15.
These anchoring sleeves are made of fibreglass reinforced plastic.

CLIMAX® - anchoring sleeve

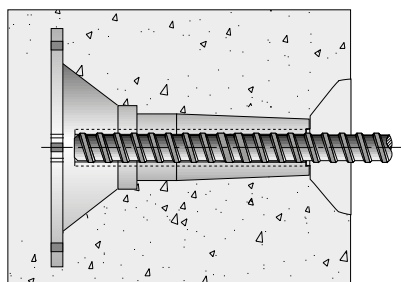
Useable for scaffolding, one-sided shuttering, slab edge formwork.

CLIMAX® Fifty - anchoring sleeve

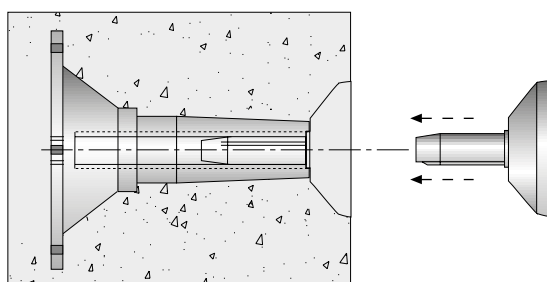
The installation depth of just 51 mm for the sleeve and of just 12 mm for the nailing cap are ideal for cavity walls.



Et = Installed depth



● Illustration for concrete quality C20/25



Item No.	Designation	Packing unit pieces	Weight kg/piece
20468200	CLIMAX®-sleeve	50	0.058
20468250	CLIMAX® Fifty-sleeve	50	0.051
20468300	CLIMAX®-nailable cap	50	0.007
20468400	CLIMAX®-cap	50	0.007
20468550	CLIMAX® Fifty-sleeve and nailable cap	50	0.058
92001032	Nailing plate with thread core	1	0.340

Designation	Et mm	a mm	b mm	F kN
CLIMAX® - anchoring sleeve	87	75	12	50
CLIMAX® Fifty	62	50	12	32

Attention

The use of thread B 15 is of obligation!

K-TEC-3s® – Applications, properties, benefits

K-TEC-3s® of BETOMAX® systems can be reused several times and combines the benefits of a temporary machine fastening by means of a coarse thread with the benefits of a self-cutting concrete bolt.

• Numerous applications

Suitable for all temporary fastening requirements for low up to medium loads, e.g. for machine fastening such as core drilling and concrete processing machines

- On the one hand: all kinds of closure means can be used due to the tough thread B 15

- On the other hand: the highly stressable, self-cutting thread guarantees a perfect and reliable anchoring in concrete

• Easy procedure

The simplicity of this system is impressive. A further advantage is the minimal number of components needed

• Considerable savings in time

The drilled hole does not need to be cleaned so that additional work is avoided

• For installing close to edge and to the axis

without any additional working aids such as tools. Only the use of a cordless screwdriver is recommended

• Resists high loads

Thanks to perfect positive fit in the concrete

• Minimal tooling

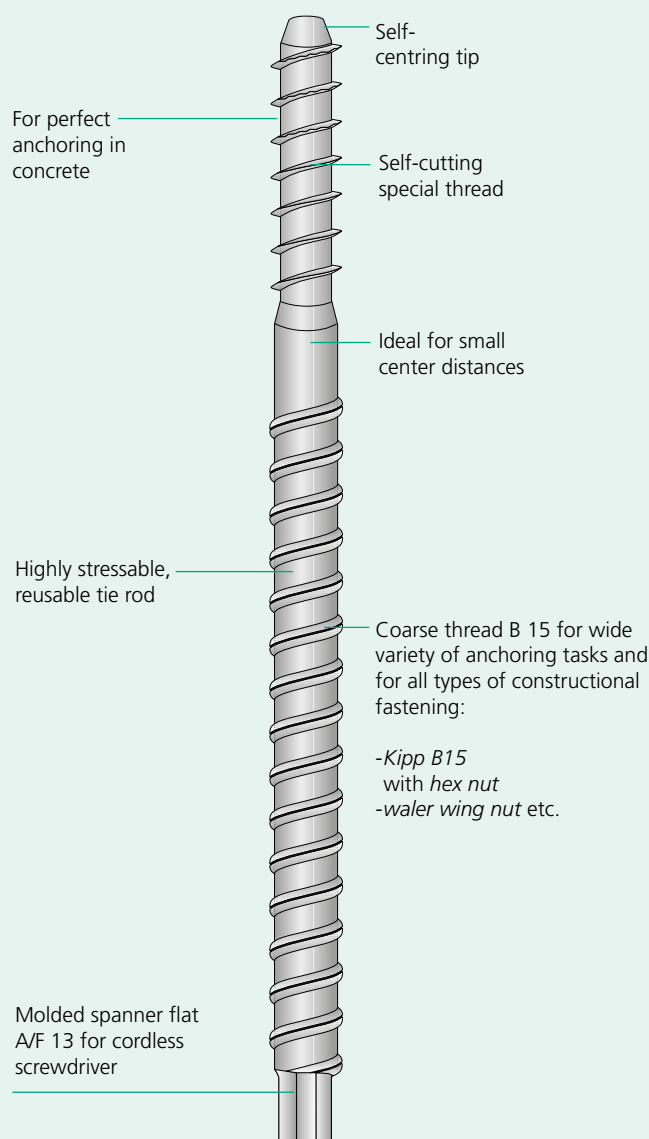
Cordless screw driver recommended

• Very simple control

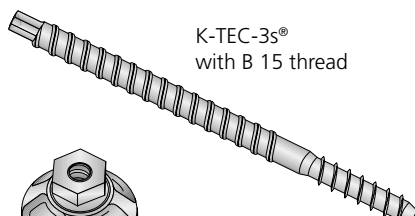
of the hole diameter (14 mm) and the hole depth. At the end the thread should be invisible

• Reusable

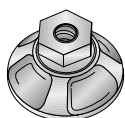
Depending on the surface conditions K-TEC-3s® can be reused up to 20 times. In this respect the BETOMAX® control gauge gives the maximum certainty



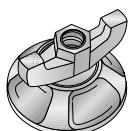
K-TEC-3s® concrete anchor bolt



K-TEC-3s®
with B 15 thread



Kipp B 15 round
with hex nut, galvanized



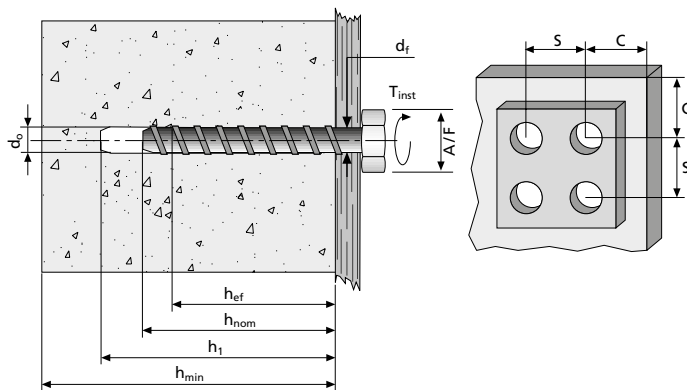
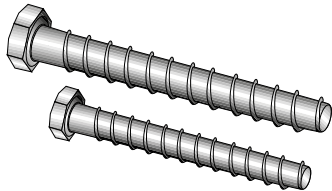
Kipp B 15 round with
wing nut, galvanized

Item No.	Designation	Packing unit piece	Weight kg/piece
18602230	K-TEC-3s® B 15 B 12 x 10 / L = 230 mm	1	0.300
18602280	K-TEC-3s® B 15 B 12 x 10 / L = 280 mm	1	0.400
18602400	K-TEC-3s® B 15 B 12 x 10 / L = 400 mm	1	0.580
18602600	K-TEC-3s® B 15 B 12 x 10 / L = 600 mm	1	0.800
18602814	SDS hammer drill	1	0.110
18602700	K-TEC-3s® control gauge, galvanized	1	0.040
20020940	Kipp B 15 round with wing nut, galvanized	1	0.780
20020950	Kipp B 15 round with hex nut, galvanized	1	0.680

Further closure means see *Anchoring technology* page 5 and 6

MULTI-MONTI® screw anchor

For securing guide posts and BETOMAX®
kerb shuttering, galvanized.



Item No.	Designation	A/F	Packing unit pieces	Weight kg/piece
74416120	MULTI-MONTI screw anchor 16x120	24	10	0.180
74416140	MULTI-MONTI screw anchor 16x140	24	10	0.210
74412080	MULTI-MONTI® screw anchor 12x80	18	25	0.140

Different diameters available on request.

Benefits

- Simple push-through installation and thereby:
- Enormous time and cost savings
- Easy to remove
- Multiple use for temporary fixings, e.g. erecting guide posts
- Safety tested in low-strength, non-hardened concrete

Permissible maximum loads for a single anchor plug for fastenings in cracked and noncracked concrete in accordance with ETA 05/0010 and ETA 05/0011.*

Anchor plug size		MMS-12	MMS-16
		gvz	gvz
Approval Notification No. ETA 05/		0010	0010
Largest permissible tensile load¹⁾ „N_{zul}“ for one anchor plug without rim effect¹⁾			
Cracked concrete C20/25 ³⁾	[kN]	4.9	12.1
Non-cracked concrete C20/25 ³⁾	[kN]	6.5	16.4
Largest permissible shearing force¹⁾ „V_{zul}“ for one anchor plug without rim effect²⁾			
Cracked concrete C20/25 ³⁾	[kN]	12.8 ⁵⁾	24.2 ⁵⁾
Non-cracked concrete C20/25 ³⁾	[kN]	12.8 ⁵⁾	24.2 ⁵⁾
Permissible bending moment¹⁾ „M_{zul}“			
	[Nm]	40.4	107.1
Component dimensions and installation parameters			
Nominal drill diameter	d ₀ = [mm]	10.0	14.0
Drill hole depth	h ₁ ≥ [mm]	85.0	130.0
Total anchoring depth	h _{nom} ≥ [mm]	75.0	115.0
Calculated anchoring depth	h _{ef} = [mm]	54.5	87.5
Min. axis distance	s _{min} = [mm]	60.0	100.0
Min. rim distance	c _{min} = [mm]	60.0	100.0
Min. component thickness	h _{min} = [mm]	125.0	180.0
Through-hole in component to be connected	d _f ≤ [mm]	14.0	18.0
Recommended max. tightening torque ⁴⁾	T _{inst} = [Nm]	55.0	110.0

* Please note that the entire approval notification must be observed when dimensioning sizes.

Remarques: ¹⁾ c ≥ 1.5 x h_{ef} and s ≥ 3 x h_{ef}

²⁾ c ≥ 10 x h_{ef}

³⁾ The concrete has been assumed to be normally reinforced. Accordingly greater resistances are possible with greater concrete strengths.

⁴⁾ The tightening torque has not been defined in the approval notification; adherence to this specification therefore bears no relevance to approval.

⁵⁾ Steel failure relevant

⁶⁾ The partial safety coefficients specified in the approval notifications for the anchor plug resistances and the partial safety coefficient for the effect of y₀ = 1.35 have been taken into account. Please observe the specifications for Design Method A set out in Appendix C of ETAG or our design aid in the event of combined loads and anchor plug groups as well as the effects of axes and rims.

High-quality raw materials and modern production sites constitute the guarantor for the technical competence of our products. For five decades, BETOMAX® *systems* has been working to the 'Made in Germany' concept of quality. Be it rationally manufactured series products or tailor-made individual solutions: BETOMAX® *systems* delivers a complete range of intelligent products and solutions for structural concrete work and civil engineering.

Anchoring technology

Tubular spreader technology

Reinforcement technology

Bridge building technology

Safety technology

Construction joint technology

Shuttering system technology

Building materials technology

Spacer technology

Work aids



When it matters...

systems
BETOMAX®

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www.betomax.de

Subject to technical change. 03 / 2019





Spacer tubes Plastic / Steel

Fibre concrete spacer tubes

Spacer tubes – Accessories

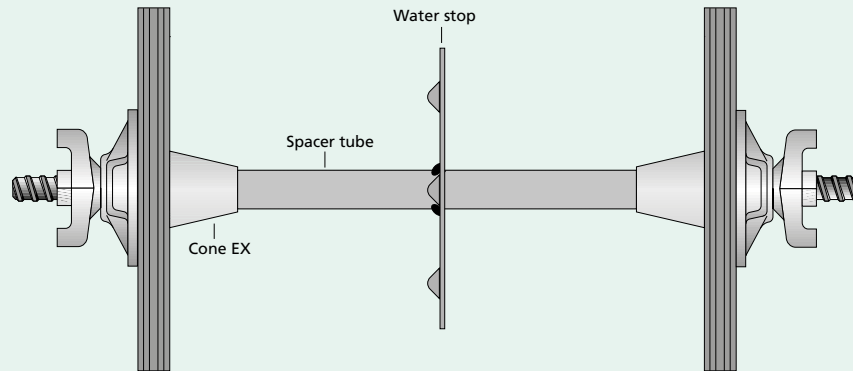


When it matters...

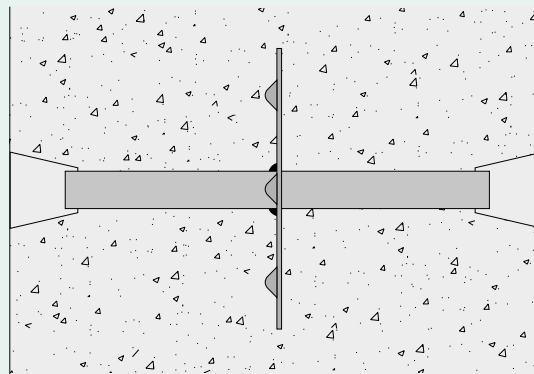
BETOMAX[®]
systems
GmbH & Co. KG

BETOMAX® tubular spreader systems – Applications, properties, benefits

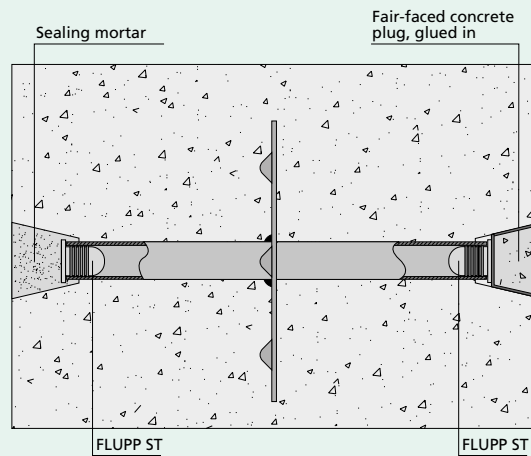
Tie point with
Dist. St 22 tubular spreader
and *welded water stop*



The tie bar can be recovered
once the shuttering is removed

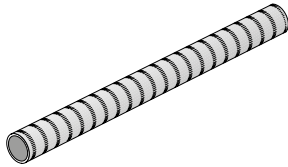


Closing with *FLUPP ST* and sealing mortar
or fair-faced concrete plug



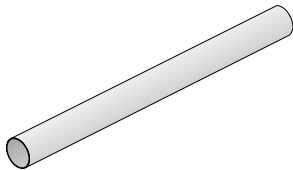
Plastic spacer tube

Rough surface for better bond with concrete.



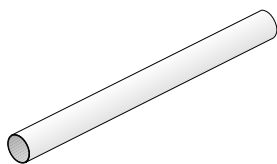
Item No.	Designation	Ø in-/outside mm	Plug	Packing unit/ lin. m	Weight kg/m
63122060	Dist K-22, rough, stock length 2.00 m	22/26	FLUPP® 22	100	0.210
63122130	Dist K-22, rough, cut lengths	22/26	FLUPP® 22	-	0.210
63126010	Dist K-26, rough, stock length 2.00 m	26/30	FLUPP® 26	50	0.240
63126190	Dist K-26, rough, cut lengths	26/30	FLUPP® 26	-	0.240
63132010	Dist K-32, rough, stock length 2.00 m	32/36	FLUPP® 32	50	0.285
63132190	Dist K-32, rough, cut lengths	32/36	FLUPP® 32	-	0.285
61822381	Self sealing O-ring			piece	0.017
61822400	Accessory: mounting pliers			piece	0.313

Plastic round section tube



Item No.	Designation	Ø in-/outside mm	Plug	Packing unit/ lin. m	Weight kg/m
63034000	section tube 34/40	34/40	Deckel 34	50	0.350
63240060	section tube 40/46	40/46	Stopf 40	40	0.470
63050050	section tube 50/54	50/54	Deckel 50	40	0.410

Steel spacer tube



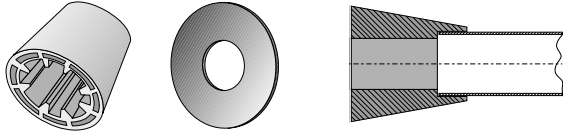
Item No.	Designation	Ø in-/outside mm	Plug	Packing unit/ lin. m	Weight kg/m
62022000	Dist St-22, stock length 2.00 m	24.8/26	FLUPP® 22 St	50	0.378
62022150	Dist St-22, cut lengths	24.8/26	FLUPP® 22 St	-	0.378
61822381	Self sealing O-ring			piece	0.017
61822400	Accessory: mounting pliers			piece	0.313

Steel spacer tubes are recommended especially for thick walls and, with welded-on water stops, at groundwater level (see *Anchoring technology* page 8).

Calculation of tube length when using cones: $L_{\text{tube}} = \text{wall thickness} - 2 \times \text{concrete cover}$

Cone EX

Especially stable cone.

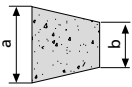


Item No.	Cone	Concrete cover mm	Packing unit pieces/bag	Weight kg/1000 pieces
60522100	EX 22	25	500	13.000
60522350	EX 22/35	35	250	22.500
60522500	EX 22/50	50	250	29.440
60526900	EX 26	25	250	14.000
60526950	EX 26/50	50	250	32.000
60532900	EX 32	30	250	20.000
60532950	EX 32/50	50	250	40.000

Sealing washer (page 6) pre-glued on request.

Fair-faced concrete plug for cone EX

For closing tapered holes. Glued in with 2-component adhesive.
One kg of adhesive is sufficient for approx. 60 concrete plugs.



Item No.	for Cone EX	Dimension mm a / b	Packing unit pieces/bag	Weight kg/piece
60922251	22-26/50	49 / 37	120	0.125

Cone EX-WU

Extremely resistant cone for impermeable tie points. The large contact surface area prevents pressure damage to the shuttering.

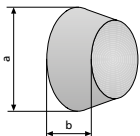


Item No.	Cone	Concrete cover mm	Packing unit pieces/bag	Weight kg/1000 pieces
60522550	EX - WU	50	50	58.880
90101000	Cone key EX-WU		1	0.640

Fair-faced concrete plug for MKK® B15 and Cone EX-WU

Inspection report

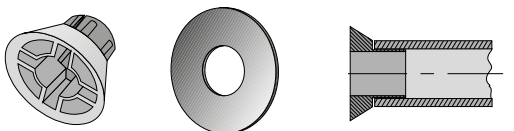
For closing tapered holes. Glued in with 2-component adhesive.
One kg of adhesive is sufficient for approx. 40 concrete plugs.



Item No.	Bezeich.	Dimension mm a / b	Packing unit pieces/bag	Weight kg/piece
18392015	Fair-faced concrete plug	60 / 49	75	0.200

Cone EX 22

Cone in elastic execution for insertion in tube.

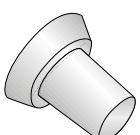


Item No.	Cone	Concrete cover mm	Packing unit pieces/bag	Weight kg/1000 pieces
60822700	EX 22/10	10	500	5.500
60622800	EX 22/15	15	500	8.260

Sealing washer (page 6) pre-glued on request.

Fair-faced concrete plug for Cone EX 22/10

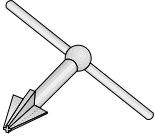
For closing tapered holes. Glued in with 2-component adhesive.
One kg of adhesive is sufficient for approx. 150 concrete plugs.
Also ideal for shadow gaps in connection with Cone EX 22/15.



Item No.	for Cone EX	Packing unit pieces/bag	Weight kg/piece
60922210	22/10	100	0.030

Cone key

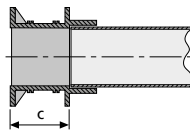
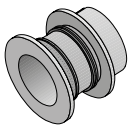
For removing Cone EX.



Item No.	Designation	Packing unit piece	Weight kg/piece
90100000	Cone key	1	0.420
90101000	Cone key EX-WU	1	0.640

Cone IN

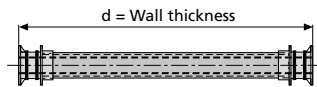
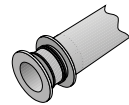
Remains in concrete. Closing device: Stopf



Item No.	Cone	Cover mm	Packing unit pieces/bag	Weight kg/1000 pcs.
60122510	IN 22, Telegrey 1 (dark)	25	500	8.500
60122520	IN 22, Telegrey 4 (light)	25	500	8.500
60126200	IN 26	25	250	13.500

Top IN 22

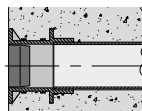
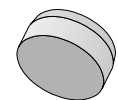
Completely assembled with Cone IN 22 for exact wall thicknesses. No joining work required on site.



Item No.	Wall thickness d	Plug Stopf / FLUPP	Packing unit pieces/bag	Weight kg/100 pcs.
62925400	24 cm	22 / 22	250	6.150
62925570	25 cm	22 / 22	250	6.320
62925640	30 cm	22 / 22	250	7.240

Stopf

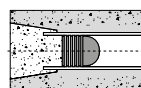
Permits a flush sealing.



Item No.	Designation	Packing unit pieces/bag	Weight kg/1000 pcs.
66320302	Stopf 20, Telegrey 1 (dark)	1000	1.620
66320304	Stopf 20, Telegrey 4 (light)	1000	1.620
66322610	Stopf 22, Telegrey 1 (dark)	1000	1.900
66322620	Stopf 22, Telegrey 4 (light)	1000	1.900
66326100	Stopf 26	1000	3.500
66332100	Stopf 32	1000	4.600
66340600	Stopf 40	250	8.667

FLUPP®

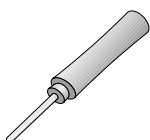
Protects the plastic spacer tubes against pressure water and prevents sound transmission at the tie points.



Item No.	Designation	Packing unit pieces/bag	Weight kg/1000 pcs.
66022020	FLUPP® 22	1000	8.854
66026080	FLUPP® 26	500	10.500
66032080	FLUPP® 32	500	24.000

Plug key

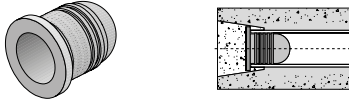
For inserting FLUPP®.



Item No.	Designation	Packing unit piece/bag	Weight kg/piece
90118600	Griffdorn	1	0.170

FLUPP ST

Is recommended as internal protection for steel spacer tubes, also against pressure water.



Item No.	Designation	Packing unit pieces/bag	Weight kg/1000 pieces
66022100	FLUPP 22 ST	500	12.167
66032150	FLUPP 32 ST	500	24.000

Deckel

Plug for plastic round tubes.



Item No.	Designation	Packing unit pieces/bag	Weight kg/1000 pieces
66434900	Deckel 34	500	5.520
66450400	Deckel 50	500	7.000

Deckel EX 22

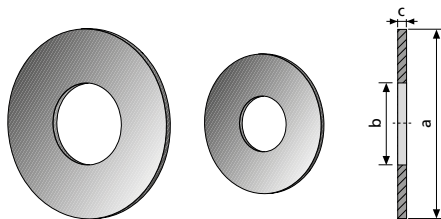
For visible tapered holes.



Item No.	Designation	Packing unit pieces	Weight kg/1000 pieces
66522510	Deckel EX 22 Tele grey 1 (dark)	1000	3.000
66522520	Deckel EX 22 Tele grey 4 (light)	1000	3.000

BETOMAX® sealing washer

Creates an optimum seal against the formwork due to its self-adhesiveness and special cellular rubber mixture.



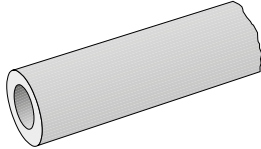
a = Outside diameter
b = Inside diameter
c = Thickness

Item No.	Designation for	Dim. a / b / c mm	Packing unit pieces/bag	Weight kg/100 pieces
60522142	Cone EX 22	42/20/2	100	0.100
60522144	Cone EX 22	42/20/4	100	0.200
60522152	Cone EX 22/50 - 26/50	52/25/2	100	0.200
60522154	Cone EX 32	52/27/2	100	0.200
61822234	Sealing cap 22	34/20/2	100	0.075

Other sizes available on request.

Fibre concrete spacer tube

Sealing methods: Fibre concrete plugs or mortar.



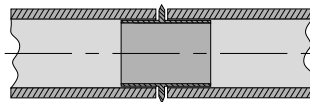
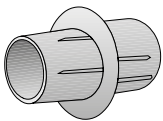
Item No.	Designation	Cut length mm	Ø in-/outside mm	Packing unit pieces/bundle – pieces/pallet	Weight kg/piece
61922180	Dist. FB - 22/40	180	22/40	25 – 1000	0.335
61922200	Dist. FB - 22/40	200	22/40	25 – 1000	0.376
61922210	Dist. FB - 22/40	210	22/40	25 – 1000	0.395
61922220	Dist. FB - 22/40	220	22/40	25 – 1000	0.409
61922230	Dist. FB - 22/40	230	22/40	25 – 1000	0.428
61922240	Dist. FB - 22/40	240	22/40	25 – 1000	0.446
61922250	Dist. FB - 22/40	250	22/40	25 – 1000	0.465
61922280	Dist. FB - 22/40	280	22/40	25 – 1000	0.520
61922300	Dist. FB - 22/40	300	22/40	25 – 800	0.558
61922330	Dist. FB - 22/40	330	22/40	25 – 800	0.614
61922345	Dist. FB - 22/40	345	22/40	25 – 800	0.632
61922400	Dist. FB - 22/40	400	22/40	25 – 800	0.744
61922000	Dist. FB - 22/40	1250	22/40	300 pcs./pallet	2.036

Other lengths available on request.

61822382	Self sealing O-ring, next in size	piece	0.025
61822400	Accessory: mounting pliers	piece	0.313

Coupling

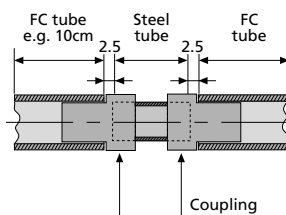
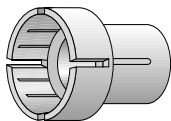
Plastic connecting piece for fibre concrete (FB 22) and plastic spacer tubes.



Item No.	Desig.	Outside Ø mm	Packing unit pieces/bag	Weight kg/1000 pieces
61822100	Coupling	22	250	5.250
61822120	Coupling	26	250	7.000
61822130	Coupling	32	125	11.200

Coupling St.-22/FB 22

Plastic connecting piece for steel spacer tube 22 with fibre concrete spacer tube (FB 22).

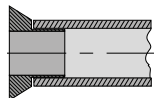
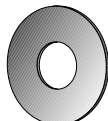
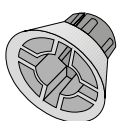


Item No.	Designation	Packing unit pieces/bag	Weight kg/1000 pieces
61822110	Coupling	250	6.600

Cut length of spacer tube = wall thickness - 5 mm
(5 mm for both couplings, disregarding deduction for taper)

Cone EX 22

Cone is inserted in the fibre concrete spacer tube and removed with the cone key.



Item No.	Desig.	Cover mm	Packing unit pieces/bag	Weight kg/unit
60822700	EX 22/10	10	500	5.500/1000 pcs.
60922210	Fair-faced concrete plug Cone EX 22/10		100	0.034/pcs.

Sealing washer (page 6) pre-glued on request.

Puller

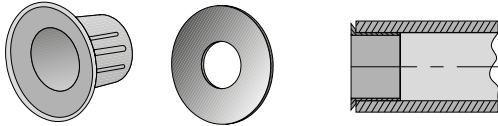
Tool for pulling out sealing caps.



Item No.	Desig.	for Ø mm	Packing unit piece	Weight kg/piece
90110000	Puller	22	1	0.100

Sealing cap

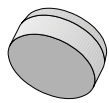
For sealing fibre concrete spacer tubes on the formwork.



Item No.	Desig.	Outside Ø mm	Packing unit pieces/bag	Weight kg/1000 pieces
61822200	Sealing cap	22	250	5.250
Sealing washer (page 6) pre-glued on request.				

Stopf 22

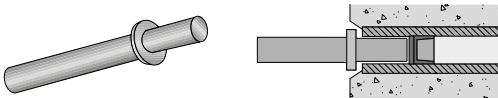
By using the insertion aid *Stopf 22* is driven into the fibre concrete tube. It serves as abutment when pasting into the fibre concrete plug.



Item No.	Designation	for Ø mm	Packing unit pieces	Weight kg/1000 pieces
66322620	Stopf 22, Tele grey 4 (light)	22	1000	1.900

Insertion aid

Tool for driving the plastic plug into the fibre concrete tube.



Item No.	Designation	for Ø mm	Packing unit piece	Weight kg/piece
61800140	Insertion aid	22	1	0.450

Fibre concrete plug

Inspection report

For reaching a flush and waterproof seal at the end of fibre concrete tubes or *SBK®/CBK®*. Gluing with *BETOMAX® 2-component adhesive*



Item No.	Ø mm	Length mm	Packing unit pieces	Weight kg/1000 pieces
61800320	22	20	1000	14.000
61800350	22	50	500	35.000

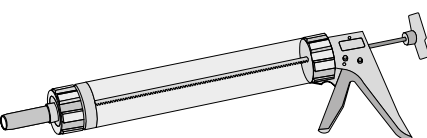
Mixer

For mixing *BETOMAX®* mortar products.
For use with a power drill

Item No.	Designation	Packing unit piece	Weight kg/piece
61801600	Mixer	1	0.290

Mortar gun

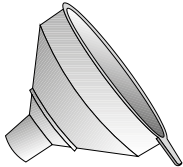
For filling cavities in spreaders and cones
with *special sealing mortar*.



Item No.	Designation	Packing unit piece	Weight kg/piece
61801200	Mortar gun	1	1.470
19025031	Special sealing mortar	1/42	25.000

Filling funnel

Facilitates the filling mortar gun with sealing mortar.



Item No.	Designation	Packing unit	Weight kg/unit
61801400	Filling funnel	1	0.260
19025031	Special sealing mortar	1/42	25.000

Two component adhesive in tins

Inspection report

Epoxy resin-based material. For waterproof tie points with fibre concrete and fair-faced concrete plugs.

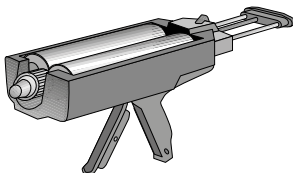


Item No.	Designation	Packing unit	Weight kg/comp. A+B
61800200	Two component adhesive	2 tins (A+B)	2 x 1.500

Two component adhesive cartridge

Inspection report

Epoxy resin-based material. For making waterproof tie points with fibre concrete plugs and fair-faced concrete plugs.



Item No.	Designation	Packing unit	Weight kg/comp. A+B
61800300	Two component adhesive	Twin cartridge (A+B)	0.820
61800310	Two component injection gun	each	1.220
19403020	mixing nozzle	each	0.009

Two component adhesive – tin

- The components are colour-coded: component A is white and component B black
- Mixing ratio 1:1
- Test report as recommended by German KTW

Instructions for use

- Mixing time: until the adhesive is free from streaks
- The surfaces being joined must be free from dust and grease
- Processing time: 2 - 2.5 hours at +20° C, min. working temperature 8°C
- Reaction temperature: 50-60°C
- 1 kg of adhesive is sufficient for approx. 40 concrete plugs MKK® B 15
- 1 kg of adhesive is sufficient for approx. 150 fibre concrete plugs FB 22 / 50 mm

Two component adhesive – cartridge

- Twin cartridge contains components A and B
- Components blended by mixing nozzle
- Test report as recommended by German KTW

Instructions for use

- The surfaces being joined must be free from dust and grease
- Minimum working temperature 8°C
- 1 kg of adhesive is sufficient for approx. 40 concrete plugs MKK® B 15
- 1 kg of adhesive is sufficient for approx. 150 fibre concrete plugs FB 22 / 50 mm

Wire brush

For cleaning adhesive surfaces in the fibre concrete tube.

Item No.	for Ø mm	Packing unit piece	Weight kg/piece
61800000	22	1	0.060

Plastic brush

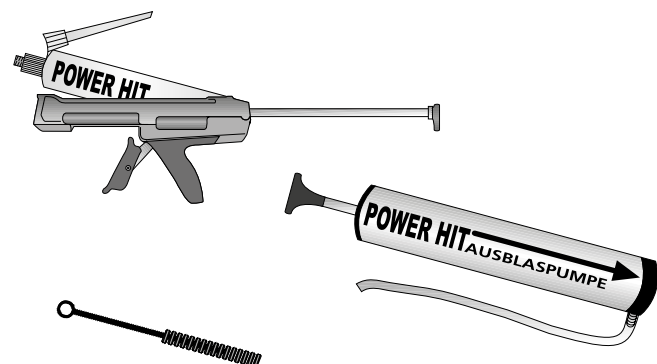
For pre-wetting the inside of the fibre concrete tube.

Item No.	Packing unit piece	Weight kg/piece
61801000	1	0.020

Power Hit

Inspection report

Two-component synthetic resin mortar for anchoring rebars and threaded bars and sleeves in all customary building materials without exerting any expansion pressure.



BETOMAX® Power Hit blow-out pump and
BETOMAX® Power Hit 14 mm round brush

Item No.	Designation	Packing unit piece	Weight kg/piece
19403000	BETOMAX® Power Hit	1	0.600
19403100	BETOMAX® Power Hit- injection gun	1	0.950
19403150	BETOMAX® Power Hit- blow-out pump	1	0.500
19403180	BETOMAX® Power Hit- 14 mm round brush	1	0.013
19403020	Mixing nozzle	1	0.009

- Reliable long-term behaviour
- High load values
- No foil packaging
- Mechanical damage to cartridge practically eliminated

Pull-out tests in crack-free concrete (5 tests per diameter):

Test results

Tie rod diameter (d) mm	Anchoring depth (h_{ef}) mm	Hole diameter (d_o) mm	Concrete strength (f_{cm}) N/mm ²	Mean load ($N_{u,m}$) kN	Variation coefficient (v) %	Failure type ¹⁾
10	90	12	41	45.0	7.0	5 x H
12	110	14	41	56.0	5.3	5 x H
16	125	18	41	63.1	9.9	4 x H / 1 x H/B
20	180	24	60	110.9	17.7	4 x H / 1 x H/B

¹⁾ H = Tie rod extracted

B = Near-surface concrete rupture

Source: Stuttgart University, Institute for Building Materials

High-quality raw materials and modern production sites constitute the guarantor for the technical competence of our products. For five decades, BETOMAX® *systems* has been working to the 'Made in Germany' concept of quality. Be it rationally manufactured series products or tailor-made individual solutions: BETOMAX® *systems* delivers a complete range of intelligent products and solutions for structural concrete work and civil engineering.

Anchoring technology

Tubular spreader technology

Reinforcement technology

Bridge building technology

Safety technology

Construction joint technology

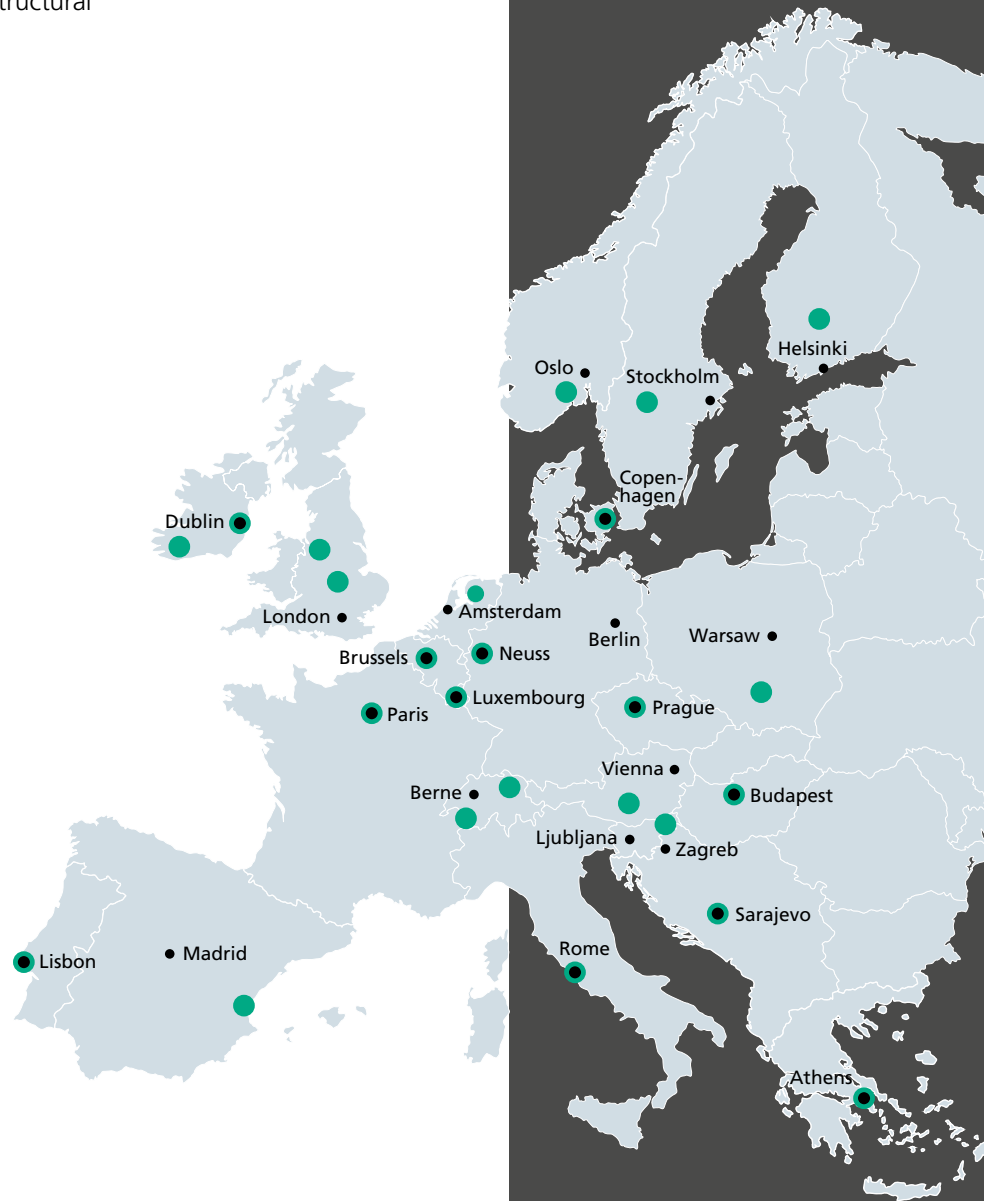
Shuttering system technology

Building materials technology

Spacer technology

Work aids

When it matters...



systems
BETOMAX®

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E-Mail export@betomax.de
www.betomax.de

Subject to technical change. 03 / 2019





CLIXS® – Punching Shear Reinforcement System

COMAX® P Reinforcement Continuity System

COMAX® - Q / L Reinforcement Continuity System

COMAX® Special Types

Rebar Coupler Box COMAX® – GTB

COMAX® Shuttering Strips

Rebar Coupler System – GTB



When it matters...

BETOMAX® *systems*
GmbH & Co. KG

Properties, benefits

CLIXS® – the ideal punching shear reinforcement system for the use in flat slabs (pre-fabricated sectional ceilings) that solves punching and shear force problems at the same time.

The CLIXS® punching shear reinforcement system consists of punched and chamfered special steel plates, 1 (or 2) additional stirrups made of reinforcing steel B 500 A/B, a clip and 2 Ø 12 mm rebars B 500 B.
– Only one basic element for all applications –



If the CLIXS® stirrups are suspended, they are kept in position by a clip and do not slide out from the plate anymore.

1 or 2 stirrups
Ø 6 mm B 500 A/B

The plates are secured and anchored during installation due to the 2 Ø 12 mm B 500 B, which are guided through the bore holes provided in the plates.

Flat slab
thickness
≥ 5 cm

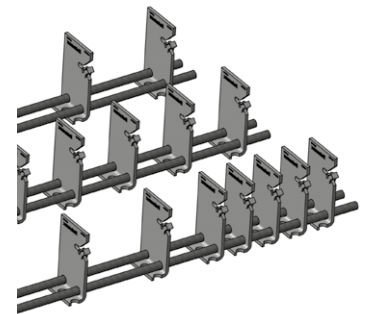
CLIXS® by BETOMAX® systems has been developed as a punching shear reinforcement system especially for flat slabs.

CLIXS® is extremely cost effective for use in pre fabricated ceilings.

The basis for calculation for CLIXS® was developed based on tests for many years and research at the Central Hessen University of Applied Sciences (Technische Hochschule Mittelhessen).

For example, the line elements can be manufactured on site at the pre-fab factory, or as complete elements for BETOMAX® systems.

Of course, there are also standard elements which can be ordered.



The CLIXS® L plates combine the upper and lower reinforcement layer with their suspended 6 mm stirrups.

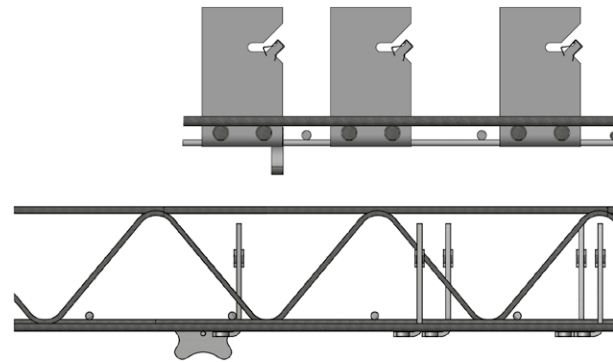
The L plates are attached on the rebars by welding points or tying.

- Easy storage – Only L-plates
- No risk of confusion by using only one plate type
- Pre-assembled individual solutions ex works
- Production and process-oriented delivery forms upon consultation
- Easy, optical monitoring of mounted elements
- The max. bearing capacity ($V_{Rd, max} = 2.05 \times V_{Rd, c}$) is higher than shear studs
- Reduced shuttering costs
- Linear arrangement of the elements, not radial (easy and quick installation)

Applications

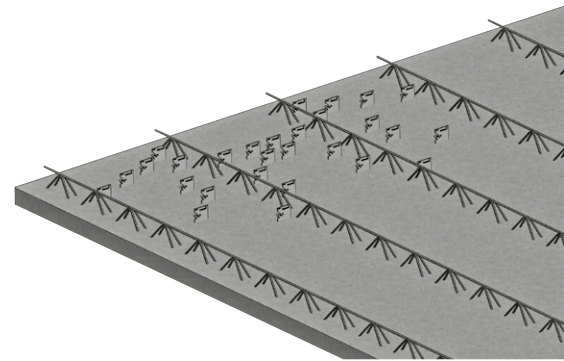
CLIXS® guarantees the easy installation of the line elements.

- According to the production diagram or the reinforcement plan parallel to the lower transverse reinforcement and the lattice girders
- Due to the linear arrangement of the CLIXS® elements
- The 12 mm rebars do not carry out any structural function, but are used to ensure the stability and accurate placement of the CLIXS® line elements
- The L plates of CLIXS® punching shear reinforcement system are in general lower than the lattice girders



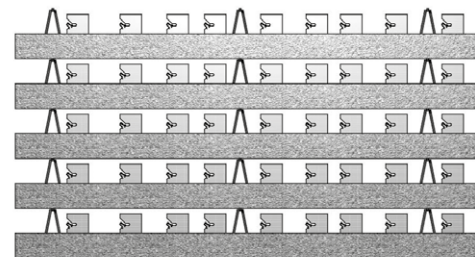
CLIXS® creates the conditions for an efficient 1st concrete section.

- Low drive-over height and unobstructed concrete discharge
- No catching or moving when automatically roughening - no manual interventions required
- Optimal usage of the curing chambers with low CLIXS® L plates and lower total finished part height



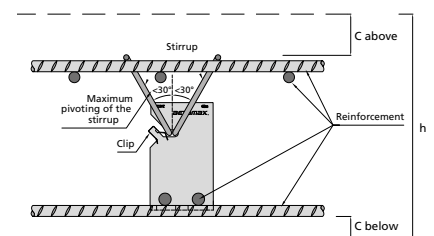
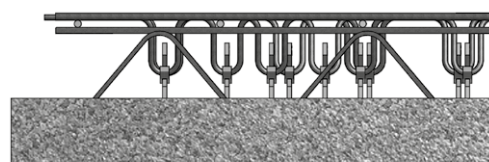
CLIXS® ensures the cost-effective handling and seamless logistics of sectional ceilings.

- CLIXS® L plates cannot be broken out of the concrete when shifting
- No collision with robot gripper arms
- Stacking, storage and transport possible without additional stacking tools
- Lowest stacking height due to low CLIXS® L plates: no spacer or extensive propping with edge blocks

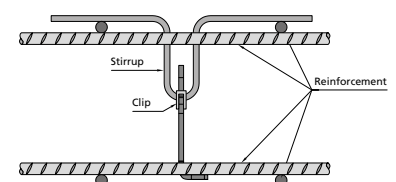


CLIXS® allows extremely secure installation at the construction site.

- Easy laying of the top reinforcement with the perpendicular/right-angle arrangement of the CLIXS® L-plates plus stirrup
- The 6 mm stirrups are simply "clixed" into the CLIXS® L-plate and locked into the longitudinal hole with the spring steel clip
- The CLIXS® stirrup form only varies in the height prescribed by the software
- The CLIXS® stirrup may be installed in an angle $\leq 30^\circ$ without taking statics into account.



Front view

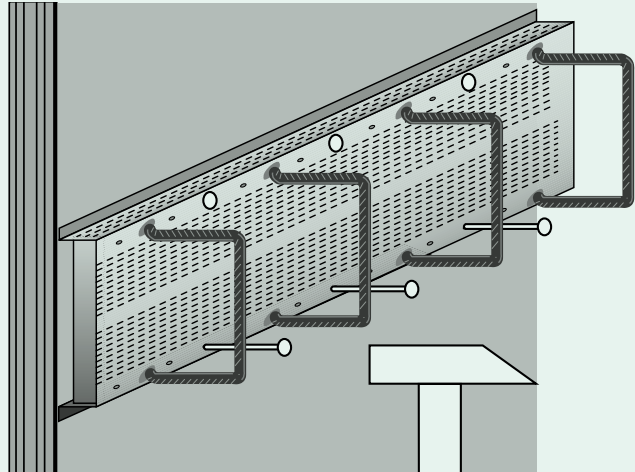


Side view

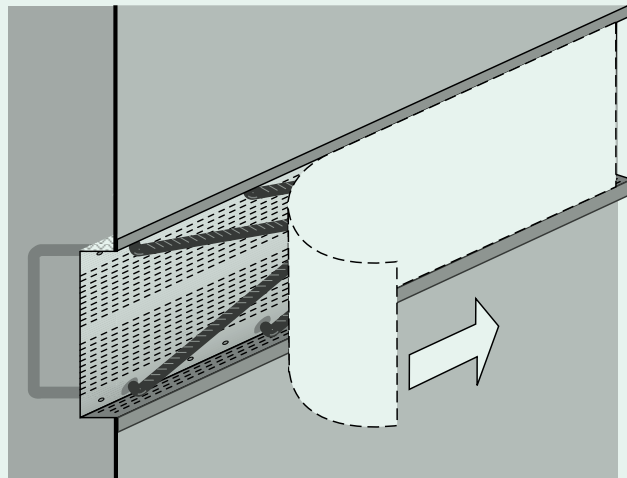
Applications, properties, benefits

COMAX® – The fast continuity strip system with tear-off cover

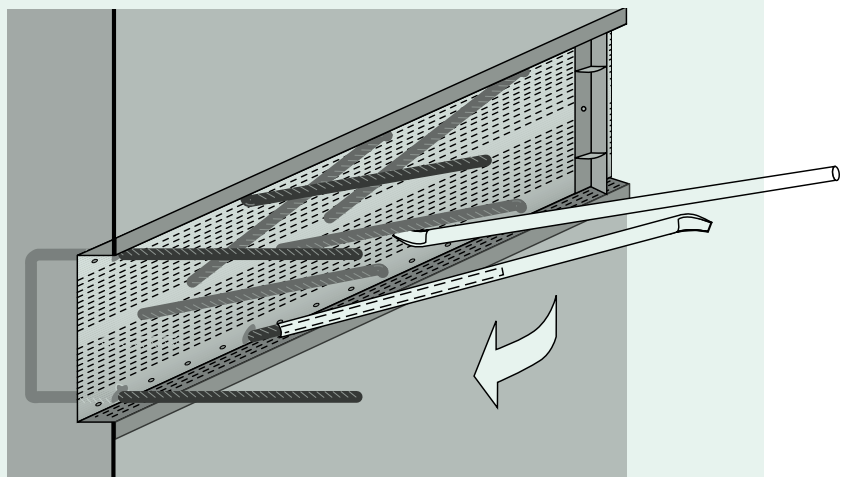
1. Nailing through the casing to the shutter face



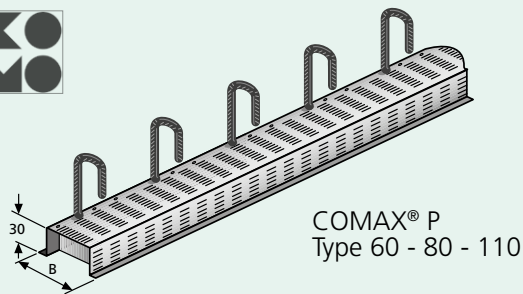
2. Remove the COMAX® lid – quick and easy due to zip-cover technology



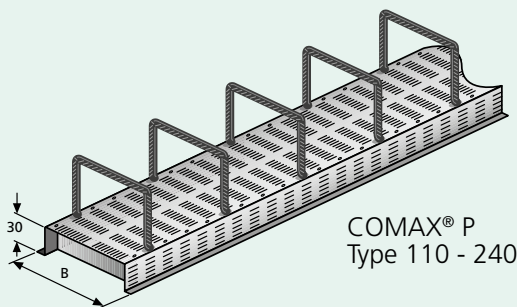
3. Rebend the overlap bars by using the correct size COMAX® rebending tool



Applications, properties, benefits



COMAX® P
Type 60 - 80 - 110



COMAX® P
Type 110 - 240

COMAX® P For faster execution of reinforcement joints

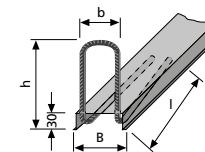
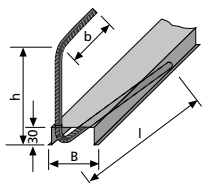
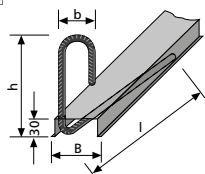
- Approved by German building authority No. Z-21.8-2056
- Also available with CARES technical approval no. 5072 and CARES approved steel on demand
- Standard length 1,25 m; box height 30 mm
- Significant advantages for the designer:
Excellent concrete bonding owing to perforated beaded strip
- Significant advantages on the building site:
COMAX® P speeds up completion of shuttering owing to tear-off cover - no tools needed
- COMAX® P – KOMO certified
- COMAX® P – robust and very strong
- COMAX® P – is highly compatible with the BETOMAX® injection hose system
- Practically no restriction of injected material
- EC2 states that the load capacity utilization of continuity strips must not exceed 80%
- Roughness parameters acc. to General German Building Approval No. Z-21.8-2056



Use/Load Roughness parameter (c)

vertical to the joint 0.5
longitudinal to the joint 0.4

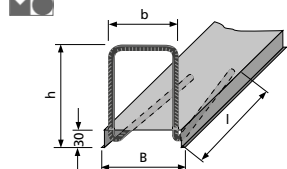
COMAX® P



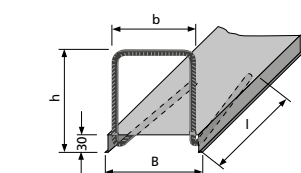
Our **COMAX® calculation tool acc. to EC2** is available as a free download at:
www.betomax.de

Item No.	Type/ box width mm	Rebar Ø mm	Rebar centres e in cm	h cm	b cm	l cm	Packing/ unit pieces/pallet	Weight kg/m
41600815	60	8	15	15	6	32	200 = 250.0 m	1.740
41600820	60	8	20	15	6	32	200	1.560
41601015	60	10	15	15	6	39	200	2.970
41601020	60	10	20	15	6	39	200	2.410
41080825	80	8	25	15	6	32	150 = 187.5 m	1.690
41081010	80	10	10	15	6	39	150	4.180
41081215	80	12	15	15	8	46	150	4.690
41081220	80	12	20	15	8	46	150	3.700
41111210	110	12	10	15	8	46	80 = 100.0 m	7.790
41610815	WH 60	8	15	15	8	32	200 = 250.0 m	1.740
41610820	WH 60	8	20	15	8	32	200	1.470
41611015	WH 60	10	15	15	8	39	200	2.350
41611020	WH 60	10	20	15	8	39	200	1.910
41800825	WH 80	8	25	15	8	32	150 = 187.5m	1.400
41801210	WH 80	12	10	15	8	35	150	6.550
41801215	WH 80	12	15	15	8	46	150	3.850
41801220	WH 80	12	20	15	8	46	150	3.390
41110815	110	8	15	15	8	32	80 = 100.0 m	3.510
41110820	110	8	20	15	8	32	80	2.890
41110825	110	8	25	15	8	32	80	2.640
41111015	110	10	15	15	8	39	80	5.420
41111020	110	10	20	15	8	39	80	4.340
41111215*	110	12	15	15	9	33	80	7.740
41111220*	110	12	20	15	9	46	80	6.040

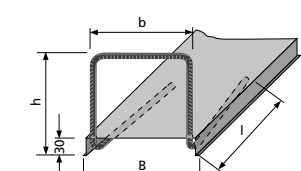
COMAX® P



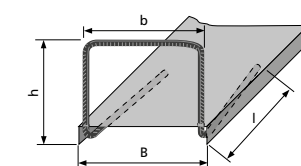
Item No.	Type/ box width mm	Rebar Ø mm	Rebar centres e in cm	h cm	b cm	l cm	Packing/ unit pieces/pallet	Weight kg/m
41140815	140	8	15	15	11	32	108 = 135 m	3.550
41140820	140	8	20	15	11	32	108	3.090
41140825	140	8	25	15	11	32	108	2.830
41141010	140	10	10	15	11	39	108	7.560
41141015	140	10	15	15	11	39	108	5.640
41141020	140	10	20	15	11	39	108	4.370
41141215	140	12	15	15	11	46	108	8.010
41141220	140	12	20	15	11	46	108	6.060



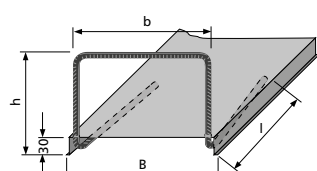
41160815	160	8	15	15	13	32	84 = 105 m	3.840
41160820	160	8	20	15	13	32	84	3.370
41160825	160	8	25	15	13	32	84	3.010
41161010	160	10	10	15	13	39	84	7.240
41161015	160	10	15	15	13	39	84	5.440
41161020	160	10	20	15	13	39	84	4.490
41161215	160	12	15	15	13	46	84	7.900
41161220	160	12	20	15	13	46	84	6.340



41190815	190	8	15	15	16	32	72 = 90 m	4.210
41190820	190	8	20	15	16	32	72	3.550
41190825	190	8	25	15	16	32	72	3.370
41191010	190	10	10	15	16	39	72	7.860
41191015	190	10	15	15	16	39	72	6.150
41191020	190	10	20	15	16	39	72	5.050
41191210	190	12	10	15	16	46	72	13.760
41191215	190	12	15	15	16	46	72	8.550
41191220	190	12	20	15	16	46	72	6.980

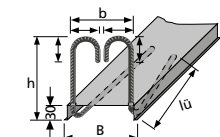


41220815	220	8	15	15	19	32	48 = 60 m	4.370
41220820	220	8	20	15	19	32	48	3.825
41220825	220	8	25	15	19	32	48	3.570
41221010	220	10	10	15	19	39	48	8.295
41221015	220	10	15	15	19	39	48	6.370
41221020	220	10	20	15	19	39	48	5.320
41221210	220	12	10	15	19	46	48	14.610
41221215	220	12	15	15	19	46	48	8.905
41221220	220	12	20	15	19	46	48	7.205



41240815	240	8	15	15	21	32	48 = 60 m	4.740
41240820	240	8	20	15	21	32	48	4.100
41240825	240	8	25	15	21	32	48	3.770
41241010	240	10	10	15	21	39	48	8.730
41241015	240	10	15	15	21	39	48	6.590
41241020	240	10	20	15	21	39	48	5.590
41241210	240	12	10	15	21	46	48	14.800
41241215	240	12	15	15	21	46	48	9.260
41241220	240	12	20	15	21	46	48	7.430

NEW – now also with dm. 14 mm reinforcing steel available



41191415	190	14	15	15	16	54	60 = 75 m	14.490
41221415	220	14	15	15	19	54	40 = 50 m	14.830
41241410	240	14	10	15	21	54	40 = 50 m	22.720
41241415	240	14	15	15	21	54	40	14.880

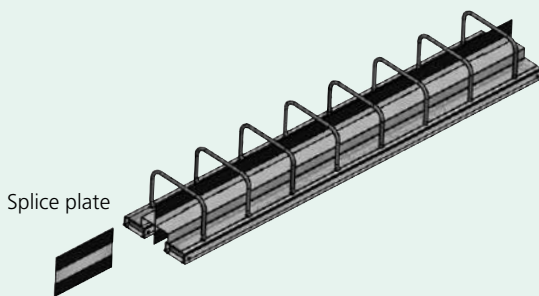
B= Type / box width / element width

l = Lap length

b= Stirrup width

h= Stirrup height

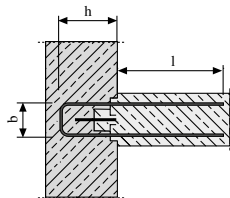
e= Rebar centres



COMAX® WU – the water proof continuity strip

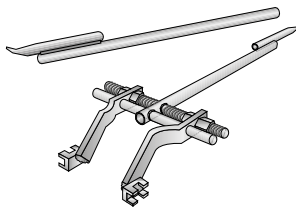
- Particular for the use of continuity strips within waterproof building components
- A combination of the COMAX® technology and our proven COMAX® Board system
- A coated joint strip FB 120 is used as a waterproofing
- Standard length 1.25 m; box height 30 mm
- COMAX® Type B with joint strip min. b = 16 cm max. b = 48 cm

COMAX® WU



Item No.	Designation	Rebar Ø mm	Rebar centres e in cm	h cm	b cm	l cm
41299999	COMAX® WU Type B	Please share measurements when ordering				
30791634	AF 100 FB k=30 Splice plate welded on COMAX®					

Tools

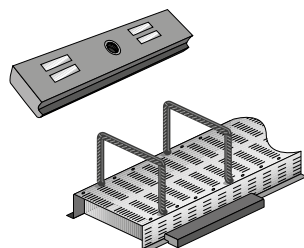


Item No.	Designation	Packing unit/piece	Weight kg/piece
43980100	Rebending tube with prong for bending back the reinforcement connectors	1	1.180
43982000	Console spade for bending back the rebars of console types	1	3.100

BETOMAX® PU Magnet

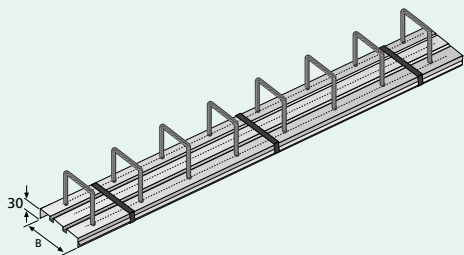
PU magnet for securing COMAX® to steel shuttering. Easily applied and removed thanks to screw thread.

Item No.	Designation	Packing unit/piece	Weight kg/piece
43880010	BETOMAX® PU magnet, green in colour length 14 cm, width 3.0 cm, height 2.0 cm	1	0.250
90414550	Screw-out tool for PU magnet	1	0.090



Benefits:

- Extremely powerful magnet: 4 magnets per 1.25 m element, 6 magnets per 2.50 m element
- Special shape - with groove - exact fit for COMAX® P
- Highly resistant: may be re-used up to ten times
- Easily employed - tools or aids not required. Removal with the help of the embedded screw thread.
- Suitable for pre-cast sections and construction sites

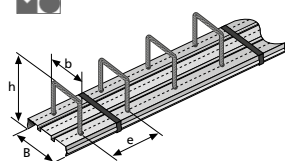


COMAX® Q – Properties and benefits

- Approved by German building authority No. Z-21.8-2056
- Standard length 1.25 m; box height 30 mm
- Tothing in longitudinal direction for optimal force transmission
- COMAX® Q for exposure to shear forces vertical to the joint
- COMAX® Q – KOMO certified
- Significant advantages for designers:
acc. to EC2 the COMAX® Q is classed as "TOOTHED"
- Dimensionally stable cover facilitates short striking times
- Special types available on request



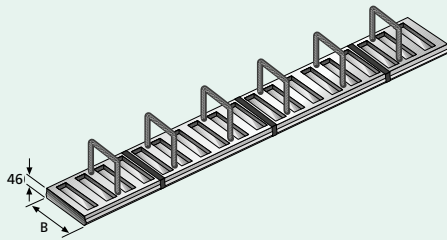
COMAX® Q



B = Type / box width / element width
l = Lap length
b = Stirrup width
h = Stirrup height
e = Rebar centres

Our **COMAX® calculation tool acc. to EC2** is available as a free download at:
www.betomax.de

Item No.	Type/ box width mm	Rebar Ø mm	Rebar centres e in cm	h cm	b cm	l cm	Packing/ unit pieces/pallet	Weight kg/m
53110815	Q 110	8	15	15	8	32	80 = 100 m	3.500
53110820	Q 110	8	20	15	8	32	80	2.890
53111015	Q 110	10	15	15	8	39	80	5.906
53111020	Q 110	10	20	15	8	39	80	4.840
53140815	Q 140	8	15	15	11	32	60 = 75 m	3.930
53140820	Q 140	8	20	15	11	32	60	3.300
53141015	Q 140	10	15	15	11	39	60	6.380
53141020	Q 140	10	20	15	11	39	60	5.284
53141215	Q 140	12	15	15	11	46	60	9.158
53141220	Q 140	12	20	15	11	46	60	7.367
53160815	Q 160	8	15	15	13	32	60 = 75 m	4.160
53160820	Q 160	8	20	15	13	32	60	3.520
53161015	Q 160	10	15	15	13	39	60	6.519
53161020	Q 160	10	20	15	13	39	60	5.403
53161215	Q 160	12	15	15	13	46	60	9.331
53161220	Q 160	12	20	15	13	46	60	7.513
53190815	Q 190	8	15	15	16	32	60 = 75 m	4.600
53190820	Q 190	8	20	15	16	32	60	3.930
53191015	Q 190	10	15	15	16	39	60	7.169
53191020	Q 190	10	20	15	16	39	60	6.023
53191215	Q 190	12	15	15	16	46	60	10.033
53191220	Q 190	12	20	15	16	46	60	8.172
53220815	Q 220	8	15	15	19	32	48 = 60 m	4.720
53220820	Q 220	8	20	15	19	32	48	3.820
53221015	Q 220	10	15	15	19	39	48	6.370
53221020	Q 220	10	20	15	19	39	48	5.320
53221215	Q 220	12	15	15	19	46	48	9.720
53221220	Q 220	12	20	15	19	46	48	7.210
53240815	Q 240	8	15	15	21	32	40 = 50 m	5.110
53240820	Q 240	8	20	15	21	32	40	4.420
53241015	Q 240	10	15	15	21	39	40	8.500
53241215	Q 240	12	15	15	21	46	40	9.260

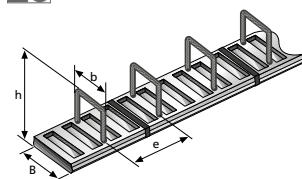


COMAX® L – Properties and benefits

- Approved by German building authority No. Z-21.8-2056
- Standard length 1.25 m; box height 46 mm
- Toothing in transverse direction for optimal force transmission
- COMAX® L for exposure to longitudinal shear forces parallel to the joint
- COMAX® L – KOMO certified
- Significant advantages for designers:
acc. to EC2 the COMAX® L is classed as "TOOTHED"
- Dimensionally stable cover facilitates short striking times
- Special types available on request



COMAX® L



B = Type / box width / element width
l = Lap length
b = Stirrup width
h = Stirrup height
e = Rebar centres

Our **COMAX® calculation tool acc. to EC2** is available as a free download at:
www.betomax.de

Item No.	Type/ box width mm	Rebar Ø mm	Rebar centres e in cm	h cm	b cm	l cm	Packing/ unit pieces/pallet	Weight kg/m
54110815	L 110	8	15	15	8	32	80 = 100 m	3.500
54110820	L 110	8	20	15	8	32	80	2.890
54111015	L 110	10	15	15	8	39	80	6.003
54111020	L 110	10	20	15	8	39	80	4.937
54140815	L 140	8	15	15	11	32	80 = 100 m	3.930
54140820	L 140	8	20	15	11	32	80	3.300
54141015	L 140	10	15	15	11	39	80	6.429
54141020	L 140	10	20	15	11	39	80	5.333
54141215	L 140	12	15	15	11	46	80	9.206
54141220	L 140	12	20	15	11	46	80	7.416
54160815	L 160	8	15	15	13	32	60 = 75 m	4.160
54160820	L 160	8	20	15	13	32	60	3.520
54161015	L 160	10	15	15	13	39	60	7.685
54161020	L 160	10	20	15	13	39	60	6.569
54161215	L 160	12	15	15	13	46	60	10.497
54161220	L 160	12	20	15	13	46	60	8.679
54190815	L 190	8	15	15	16	32	60 = 75 m	4.600
54190820	L 190	8	20	15	16	32	60	3.930
54191015	L 190	10	15	15	16	39	60	8.345
54191020	L 190	10	20	15	16	39	60	7.200
54191215	L 190	12	15	15	16	46	60	11.210
54191220	L 190	12	20	15	16	46	60	9.349
54220815	L 220	8	15	15	19	32	48 = 60 m	4.920
54220820	L 220	8	20	15	19	32	48	4.020
54221015	L 220	10	15	15	19	39	48	6.570
54221020	L 220	10	20	15	19	39	48	5.520
54221215	L 220	12	15	15	19	46	48	9.920
54221220	L 220	12	20	15	19	46	48	7.410
54240815	L 240	8	15	15	21	32	40 = 50 m	5.110
54240820	L 240	8	20	15	21	32	40	4.420
54241015	L 240	10	15	15	21	39	40	6.720
54241215	L 240	12	15	15	21	46	40	9.400



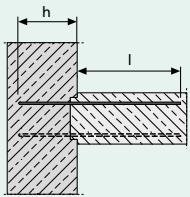
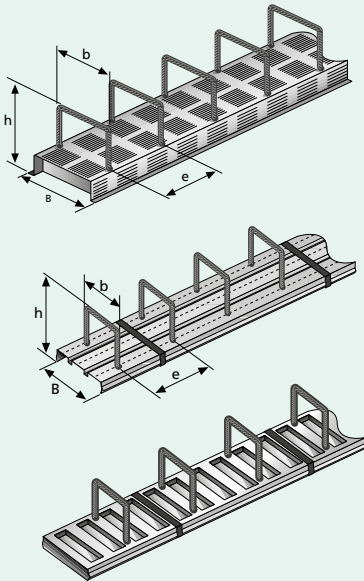
COMAX® Special types

BETOMAX® supplies various special types of the COMAX® P, Q and L for specific needs with the following parameters:

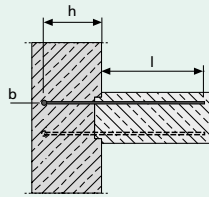
- Approved by German building authority No. Z-21.8-2056
- COMAX® P element lengths up to 2.50 m
- COMAX® Q and L element lengths up to 1.25 m
- Element/strip width (B) for COMAX® P 60, 80, 110, 140, 160, 190, 220 and 240 mm
- Element/strip width (B) for COMAX® Q and COMAX® L 110, 140, 160, 190, 220 and 240 mm
- COMAX® P, Q and L – KOMO certified
- Height of the casing: COMAX® P and Q: 30 mm
- Height of the casing: COMAX® L: 46 mm
- Stirrup types as per drawings
- Steel-Ø 8, 10 and 12 mm, Ø 6 and 14 mm on request
- Standard stirrup spacing 15, 20 and 25 cm
- Variable stirrup spacing (e) available (COMAX® L only available with 5 cm spacing)
- COMAX® P and Q: Stirrup width (b) always 2 cm less than selected element width (B) in one strip
- COMAX® L and KOMO certified: stirrup width (b) at least 3 cm smaller than chosen box width (B)



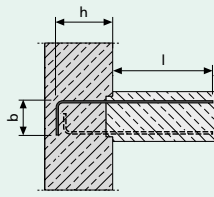
According to **EC2**, 80% of the reinforcement cross-section can be utilised



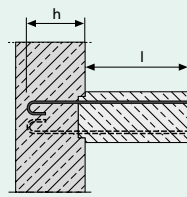
Type W
(Type W double leg)
Simple angle; two-section double angle (hook), also available with various steel diameters



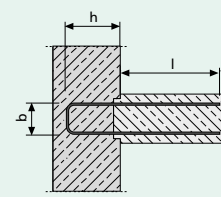
Type WH
(Type WH double leg)
Angle with hook in strip direction; two-section double angle (hook), also available with various steel diameters



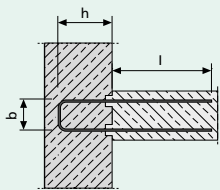
Type WS
(Type WS double leg)
Angle with lateral hook; two-section double angle (hook), also available with various steel diameters



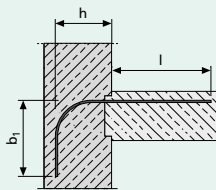
Type H
(Type H double leg)
Hook, as standard 60 or 80 sizes



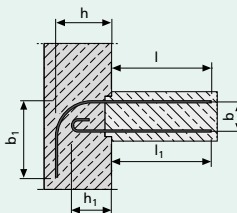
Type S1
Inserted stirrup in one strip



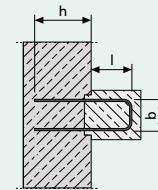
Type B
Wide joint, inserted stirrup in two strips



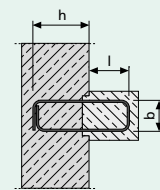
Type BA
Rigid joint, type BA with bending roll 10 ds



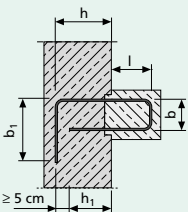
Type BA with compr. bar
Rigid joint type BA with bending roll 10 ds, different top/bottom steel diameters available



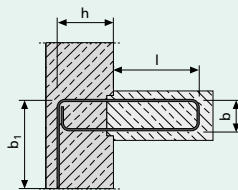
Type KO ¹⁾
Console type, open stirrup



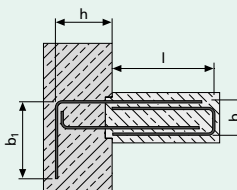
Type K ¹⁾
Console, closed stirrup, only for stirrup widths B = 90, 120, 140, 170 and 220 mm possible



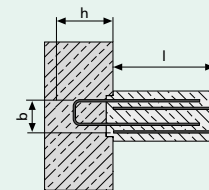
Type KH ¹⁾
Console, half-open stirrup
 $h_1 \text{ max} = h - 5 \text{ cm}$
Also with a bending roll of 10 ds available.



Type BK ¹⁾
Console, closed stirrup, only for stirrup widths B = 90, 120, 140, 170 and 220 mm possible



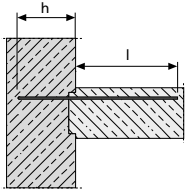
Type KHS
Console type for long cantilevers with separate inserted stirrup. Provided stirrup must be wired after bending-out operation



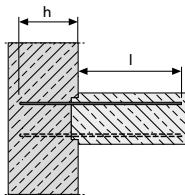
Type KS
Console type for long cantilevers with separate inserted stirrup. Provided stirrup must be wired after bending-out operation

¹⁾ Depending on stirrup spacing and length "L", the stirrups in the strip are bent conically

Type W
simple angle



Type W double leg
double angle



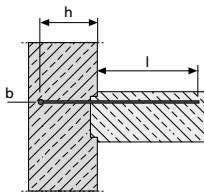
Also available with different bar diameters.

The dimensions e, h and l are variable depending on box width strip width and bar diameter.

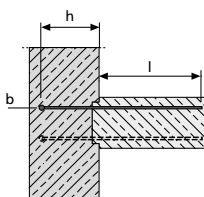
Box width (mm)	Type P/Q/L	Rebar Ø 08/10/12	Rebar centres e (cm)	Stirrup height h (cm)	Lap length for box length	
					83 cm l (cm)	125 cm l (cm)
60	P	8	10	8 – 98	max. 41	max. 41
60	P	8	15	8 – 98	max. 45	max. 67
60	P	8	20	8 – 98	max. 49	max. 69
60	P	10	10	8 – 98	max. 31	max. 31
60	P	10	15	8 – 98	max. 44	max. 46
60	P	10	20	8 – 98	max. 48	max. 58
60	P	12	10	8 – 98	max. 23	max. 23
60	P	12	15	8 – 98	max. 35	max. 35
60	P	12	20	8 – 98	max. 48	max. 51
80	P	8	10	8 – 98	max. 43	max. 64
80	P	8	15	8 – 98	max. 45	max. 67
80	P	8	20	8 – 98	max. 49	max. 70
80	P	10	10	10 – 98	max. 42	max. 45
80	P	10	15	10 – 98	max. 45	max. 65
80	P	10	20	10 – 98	max. 47	max. 68
80	P	12	10	12 – 98	max. 38	max. 38
80	P	12	15	12 – 98	max. 42	max. 58
80	P	12	20	12 – 98	max. 48	max. 67
110	P/Q/L	8	10	8 – 98	max. 44	max. 64
110	P/Q/L	8	15	8 – 98	max. 46	max. 67
110	P/Q/L	8	20	8 – 98	max. 49	max. 70
110	P/Q/L	10	10	10 – 98	max. 43	max. 63
110	P/Q/L	10	15	10 – 98	max. 44	max. 66
110	P/Q/L	10	20	10 – 98	max. 48	max. 69
110	P/Q/L	12	10	12 – 98	max. 43	max. 62
110	P/Q/L	12	15	12 – 98	max. 44	max. 66
110	P/Q/L	12	20	12 – 98	max. 48	max. 69

Subject to technical modifications. All dimensions as well as the combination of the maximum values on request.
Design examples only.

Type WH
angle with hook
towards casing



Type WH double leg
double angle with hook
towards casing



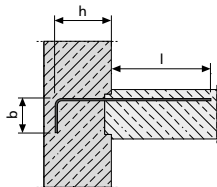
Also available with different bar diameters.

The dimensions e, h and l are variable depending on box width strip width and bar diameter.

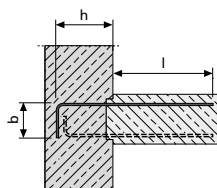
Box width (mm)	Type P/Q/L	Rebar Ø 08/10/12	Rebar centres e (cm)	Stirrup width b (cm)	Stirrup height h (cm)	Lap length for box length	
						83 cm l (cm)	125 cm l (cm)
60	P	8	10	8	8 – 98	max. 41	max. 41
60	P	8	15	8 – 12	8 – 98	max. 45	max. 67
60	P	8	20	8 – 17	8 – 98	max. 49	max. 69
60	P	10	10	8	10 – 98	max. 31	max. 31
60	P	10	15	8 – 12	10 – 98	max. 44	max. 46
60	P	10	20	8 – 17	10 – 98	max. 48	max. 58
60	P	12	10	8	12 – 98	max. 23	max. 23
60	P	12	15	8 – 12	12 – 98	max. 35	max. 35
60	P	12	20	8 – 17	12 – 98	max. 48	max. 51
80	P	8	10	8	8 – 98	max. 43	max. 64
80	P	8	15	8 – 12	8 – 98	max. 45	max. 67
80	P	8	20	8 – 17	8 – 98	max. 49	max. 70
80	P	10	10	8	10 – 98	max. 42	max. 45
80	P	10	15	8 – 12	10 – 98	max. 45	max. 65
80	P	10	20	8 – 17	10 – 98	max. 47	max. 68
80	P	12	10	8	12 – 98	max. 38	max. 38
80	P	12	15	8 – 12	12 – 98	max. 42	max. 58
80	P	12	20	8 – 17	12 – 98	max. 48	max. 67
110	P/Q/L	8	10	8	8 – 98	max. 44	max. 64
110	P/Q/L	8	15	8 – 12	8 – 98	max. 46	max. 67
110	P/Q/L	8	20	8 – 17	8 – 98	max. 49	max. 70
110	P/Q/L	10	10	8	10 – 98	max. 43	max. 63
110	P/Q/L	10	15	8 – 12	10 – 98	max. 44	max. 66
110	P/Q/L	10	20	8 – 17	10 – 98	max. 48	max. 69
110	P/Q/L	12	10	8	12 – 98	max. 43	max. 62
110	P/Q/L	12	15	8 – 12	12 – 98	max. 44	max. 66
110	P/Q/L	12	20	8 – 17	12 – 98	max. 48	max. 69

Subject to technical modifications. All dimensions as well as the combination of the maximum values on request.
Design examples only.

Typ WS
angle with lateral hook



Type WS - double leg
double angle
with lateral hook



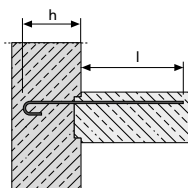
Also available with different bar diameters.

The dimensions e, h and l are variable depending on box width strip width and bar diameter.

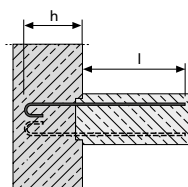
Box width (mm)	Type P/Q/L	Rebar Ø 08/10/12	Rebar centres e (cm)	Stirrup width b (cm)	Stirrup height h (cm)	Lap length for box length	
						83 cm l (cm)	125 cm l (cm)
60	P	8	10	8 – AOR	8 – 98	max. 41	max. 41
60	P	8	15	8 – AOR	8 – 98	max. 45	max. 67
60	P	8	20	8 – AOR	8 – 98	max. 49	max. 69
60	P	10	10	8 – AOR	10 – 98	max. 31	max. 31
60	P	10	15	8 – AOR	10 – 98	max. 44	max. 46
60	P	10	20	8 – AOR	10 – 98	max. 48	max. 58
60	P	12	10	8 – AOR	12 – 98	max. 23	max. 23
60	P	12	15	8 – AOR	12 – 98	max. 35	max. 35
60	P	12	20	8 – AOR	12 – 98	max. 48	max. 51
80	P	8	10	8 – AOR	8 – 98	max. 43	max. 64
80	P	8	15	8 – AOR	8 – 98	max. 45	max. 67
80	P	8	20	8 – AOR	8 – 98	max. 49	max. 70
80	P	10	10	8 – AOR	10 – 98	max. 42	max. 45
80	P	10	15	8 – AOR	10 – 98	max. 45	max. 65
80	P	10	20	8 – AOR	10 – 98	max. 47	max. 68
80	P	12	10	8 – AOR	12 – 98	max. 38	max. 38
80	P	12	15	8 – AOR	12 – 98	max. 42	max. 58
80	P	12	20	8 – AOR	12 – 98	max. 48	max. 67
110	P/Q/L	8	10	8 – AOR	8 – 98	max. 44	max. 64
110	P/Q/L	8	15	8 – AOR	8 – 98	max. 46	max. 67
110	P/Q/L	8	20	8 – AOR	8 – 98	max. 49	max. 70
110	P/Q/L	10	10	8 – AOR	10 – 98	max. 43	max. 63
110	P/Q/L	10	15	8 – AOR	10 – 98	max. 44	max. 66
110	P/Q/L	10	20	8 – AOR	10 – 98	max. 48	max. 69
110	P/Q/L	12	10	8 – AOR	12 – 98	max. 43	max. 62
110	P/Q/L	12	15	8 – AOR	12 – 98	max. 44	max. 66
110	P/Q/L	12	20	8 – AOR	12 – 98	max. 48	max. 69

Subject to technical modifications. All dimensions as well as the combination of the maximum values on request.
Design examples only.

Type H
hook



Type H - double leg
double hook



Also available with different bar diameters.

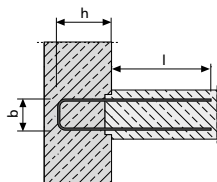
The dimensions e, h and l are variable depending on box width strip width and bar diameter.

Box width (mm)	Type P/Q/L	Rebar Ø 08/10/12	Rebar centres e (cm)	Stirrup height h (cm)	Lap length for box length	
					83 cm l (cm)	125 cm l (cm)
60	P	8	10	8 – 98	max. 41	max. 41
60	P	8	15	8 – 98	max. 45	max. 67
60	P	8	20	8 – 98	max. 49	max. 69
60	P	10	10	8 – 98	max. 31	max. 31
60	P	10	15	8 – 98	max. 44	max. 46
60	P	10	20	8 – 98	max. 48	max. 58
60	P	12	10	8 – 98	max. 23	max. 23
60	P	12	15	8 – 98	max. 35	max. 35
60	P	12	20	8 – 98	max. 48	max. 51
80	P	8	10	8 – 98	max. 43	max. 64
80	P	8	15	8 – 98	max. 45	max. 67
80	P	8	20	8 – 98	max. 49	max. 70
80	P	10	10	10 – 98	max. 42	max. 45
80	P	10	15	10 – 98	max. 45	max. 65
80	P	10	20	10 – 98	max. 47	max. 68
80	P	12	10	12 – 98	max. 38	max. 38
80	P	12	15	12 – 98	max. 42	max. 58
80	P	12	20	12 – 98	max. 48	max. 67
110	P/Q/L	8	10	8 – 98	max. 44	max. 64
110	P/Q/L	8	15	8 – 98	max. 46	max. 67
110	P/Q/L	8	20	8 – 98	max. 49	max. 70
110	P/Q/L	10	10	10 – 98	max. 43	max. 63
110	P/Q/L	10	15	10 – 98	max. 44	max. 66
110	P/Q/L	10	20	10 – 98	max. 48	max. 69
110	P/Q/L	12	10	12 – 98	max. 43	max. 62
110	P/Q/L	12	15	12 – 98	max. 44	max. 66
110	P/Q/L	12	20	12 – 98	max. 48	max. 69

Subject to technical modifications. All dimensions as well as the combination of the maximum values on request.
Design examples only.

Type S1 double leg ,U' bar

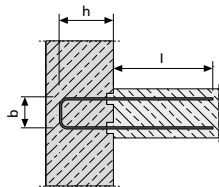
The dimensions e, h and l are variable depending on box width strip width and bar diameter.



Strip width	Type	Rebar Ø	Rebar centres	Stirrup width	Stirrup height	Lap length for box length	
(mm)	P/Q/L	08/10/12	e (cm)	b (cm)	h (cm)	83 cm l (cm)	125 cm l (cm)
80	P	8	10	5	8 – 98	max. 20	max. 20
80	P	8	15	5	8 – 98	max. 31	max. 31
80	P	8	20	5	8 – 98	max. 41.5	max. 42
80	P	10	10	6	10 – 98	max. 14	max. 14
80	P	10	15	6	10 – 98	max. 23	max. 23
80	P	10	20	6	10 – 98	max. 31	max. 31
110	P/Q/L	8	10	8	8 – 98	max. 30	max. 30
110	P/Q/L	8	15	8	8 – 98	max. 41.5	max. 46
110	P/Q/L	8	20	8	8 – 98	max. 41.5	max. 62
110	P/Q/L	10	10	8	10 – 98	max. 23	max. 23
110	P/Q/L	10	15	8	10 – 98	max. 35	max. 35
110	P/Q/L	10	20	8	10 – 98	max. 41.5	max. 48
110	P/Q/L	12	10	8	12 – 98	max. 18	max. 18
110	P/Q/L	12	15	8	12 – 98	max. 28	max. 28
110	P/Q/L	12	20	8	12 – 98	max. 38	max. 38
140	P/Q/L	8	10	11	8 – 98	max. 41.5	max. 45
140	P/Q/L	8	15	11	8 – 98	max. 41.5	max. 62.5
140	P/Q/L	8	20	11	8 – 98	max. 41.5	max. 62.5
140	P/Q/L	10	10	11	10 – 98	max. 35	max. 35
140	P/Q/L	10	15	11	10 – 98	max. 41.5	max. 54
140	P/Q/L	10	20	11	10 – 98	max. 41.5	max. 62.5
140	P/Q/L	12	10	11	12 – 98	max. 28	max. 28
140	P/Q/L	12	15	11	12 – 98	max. 41.5	max. 44
140	P/Q/L	12	20	11	12 – 98	max. 41.5	max. 59
160	P/Q/L	8	10	13	8 – 98	max. 41.5	max. 55
160	P/Q/L	8	15	13	8 – 98	max. 41.5	max. 62.5
160	P/Q/L	8	20	13	8 – 98	max. 41.5	max. 62.5
160	P/Q/L	10	10	13	10 – 98	max. 41.5	max. 44
160	P/Q/L	10	15	13	10 – 98	max. 41.5	max. 62.5
160	P/Q/L	10	20	13	10 – 98	max. 41.5	max. 62.5
160	P/Q/L	12	10	13	12 – 98	max. 36	max. 36
160	P/Q/L	12	15	13	12 – 98	max. 41.5	max. 54
160	P/Q/L	12	20	13	12 – 98	max. 41.5	max. 62.5
190	P/Q/L	8	10	16	8 – 98	max. 41.5	max. 62.5
190	P/Q/L	8	15	16	8 – 98	max. 41.5	max. 62.5
190	P/Q/L	8	20	16	8 – 98	max. 41.5	max. 62.5
190	P/Q/L	10	10	16	10 – 98	max. 41.5	max. 56
190	P/Q/L	10	15	16	10 – 98	max. 41.5	max. 62.5
190	P/Q/L	10	20	16	10 – 98	max. 41.5	max. 62.5
190	P/Q/L	12	10	16	12 – 98	max. 41.5	max. 46
190	P/Q/L	12	15	16	12 – 98	max. 41.5	max. 62.5
190	P/Q/L	12	20	16	12 – 98	max. 41.5	max. 62.5
220	P/Q/L	8	10	19	8 – 98	max. 41.5	max. 62.5
220	P/Q/L	8	15	19	8 – 98	max. 41.5	max. 62.5
220	P/Q/L	8	20	19	8 – 98	max. 41.5	max. 62.5
220	P/Q/L	10	10	19	10 – 98	max. 41.5	max. 62.5
220	P/Q/L	10	15	19	10 – 98	max. 41.5	max. 62.5
220	P/Q/L	10	20	19	10 – 98	max. 41.5	max. 62.5
220	P/Q/L	12	10	19	12 – 98	max. 41.5	max. 57
220	P/Q/L	12	15	19	12 – 98	max. 41.5	max. 62.5
220	P/Q/L	12	20	19	12 – 98	max. 41.5	max. 62.5
240	P/Q/L	8	10	21	8 – 98	max. 41.5	max. 62.5
240	P/Q/L	8	15	21	8 – 98	max. 41.5	max. 62.5
240	P/Q/L	8	20	21	8 – 98	max. 41.5	max. 62.5
240	P/Q/L	10	10	21	10 – 98	max. 41.5	max. 62.5
240	P/Q/L	10	15	21	10 – 98	max. 41.5	max. 62.5
240	P/Q/L	10	20	21	10 – 98	max. 41.5	max. 62.5
240	P/Q/L	12	10	21	12 – 98	max. 41.5	max. 62.5
240	P/Q/L	12	15	21	12 – 98	max. 41.5	max. 62.5
240	P/Q/L	12	20	21	12 – 98	max. 41.5	max. 62.5

Subject to technical modifications. All dimensions as well as the combination of the maximum values on request.
Design examples only.

Type B
big connection, double
leg, U' bar in 2 boxes

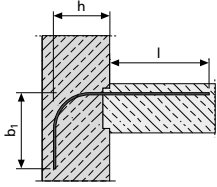


The dimensions e, h and l are variable depending on box width strip width and bar diameter.

Box width (mm)	Type P/Q/L	Rebar Ø 08/10/12	Rebar centres e (cm)	Stirrup width b (cm)	Stirrup height h (cm)	Lap length for box length	
						83 cm l (cm)	125 cm l (cm)
60	P	8	10	12 – AOR	8 – 98	7 – 41	7 – 41
60	P	8	15	12 – AOR	8 – 98	7 – 45	7 – 67
60	P	8	20	12 – AOR	8 – 98	7 – 49	7 – 69
60	P	10	10	12 – AOR	10 – 98	9 – 31	9 – 31
60	P	10	15	12 – AOR	10 – 98	9 – 44	9 – 46
60	P	10	20	12 – AOR	10 – 98	9 – 48	9 – 58
80	P	8	10	16 – AOR	8 – 98	7 – 43	7 – 64
80	P	8	15	16 – AOR	8 – 98	7 – 45	7 – 67
80	P	8	20	16 – AOR	8 – 98	7 – 49	7 – 70
80	P	10	10	16 – AOR	10 – 98	9 – 42	9 – 45
80	P	10	15	16 – AOR	10 – 98	9 – 45	9 – 65
80	P	10	20	16 – AOR	10 – 98	9 – 47	9 – 68
80	P	12	10	16 – AOR	12 – 98	10 – 40	11 – 38
80	P	12	15	16 – AOR	12 – 98	11 – 42	11 – 58
80	P	12	20	16 – AOR	12 – 98	11 – 48	11 – 67
110	P/Q/L	8	10	22 – AOR	8 – 98	7 – 44	7 – 64
110	P/Q/L	8	15	22 – AOR	8 – 98	7 – 46	7 – 67
110	P/Q/L	8	20	22 – AOR	8 – 98	7 – 49	7 – 70
110	P/Q/L	10	10	22 – AOR	10 – 98	9 – 43	9 – 63
110	P/Q/L	10	15	22 – AOR	10 – 98	9 – 44	9 – 66
110	P/Q/L	10	20	22 – AOR	10 – 98	9 – 48	9 – 69
110	P/Q/L	12	10	22 – AOR	12 – 98	11 – 43	11 – 62
110	P/Q/L	12	15	22 – AOR	12 – 98	11 – 44	11 – 66
110	P/Q/L	12	20	22 – AOR	12 – 98	11 – 48	11 – 69
140	P/Q/L	8	10	28 – AOR	8 – 98	7 – 44	7 – 65
140	P/Q/L	8	15	28 – AOR	8 – 98	7 – 47	7 – 68
140	P/Q/L	8	20	28 – AOR	8 – 98	7 – 50	7 – 70
140	P/Q/L	10	10	28 – AOR	10 – 98	9 – 43	9 – 64
140	P/Q/L	10	15	28 – AOR	10 – 98	9 – 46	9 – 67
140	P/Q/L	10	20	28 – AOR	10 – 98	9 – 49	9 – 69
140	P/Q/L	12	10	28 – AOR	12 – 98	11 – 43	11 – 64
140	P/Q/L	12	15	28 – AOR	12 – 98	11 – 46	11 – 67
140	P/Q/L	12	20	28 – AOR	12 – 98	11 – 49	11 – 69
160	P/Q/L	8	10	32 – AOR	8 – 98	7 – 45	7 – 66
160	P/Q/L	8	15	32 – AOR	8 – 98	7 – 47	7 – 68
160	P/Q/L	8	20	32 – AOR	8 – 98	7 – 50	7 – 71
160	P/Q/L	10	10	32 – AOR	10 – 98	9 – 43	9 – 64
160	P/Q/L	10	15	32 – AOR	10 – 98	9 – 46	9 – 67
160	P/Q/L	10	20	32 – AOR	10 – 98	9 – 49	9 – 70
160	P/Q/L	12	10	32 – AOR	12 – 98	11 – 43	11 – 64
160	P/Q/L	12	15	32 – AOR	12 – 98	11 – 46	11 – 67
160	P/Q/L	12	20	32 – AOR	12 – 98	11 – 49	11 – 70
190	P/Q/L	8	10	38 – AOR	8 – 98	7 – 46	7 – 66
190	P/Q/L	8	15	38 – AOR	8 – 98	7 – 48	7 – 68
190	P/Q/L	8	20	38 – AOR	8 – 98	7 – 51	7 – 71
190	P/Q/L	10	10	38 – AOR	10 – 98	9 – 45	9 – 65
190	P/Q/L	10	15	38 – AOR	10 – 98	9 – 47	9 – 68
190	P/Q/L	10	20	38 – AOR	10 – 98	9 – 50	9 – 70
190	P/Q/L	12	10	38 – AOR	12 – 98	11 – 44	11 – 65
190	P/Q/L	12	15	38 – AOR	12 – 98	11 – 47	11 – 68
190	P/Q/L	12	20	38 – AOR	12 – 98	11 – 50	11 – 70
220	P/Q/L	8	10	44 – AOR	8 – 98	7 – 47	7 – 68
220	P/Q/L	8	15	44 – AOR	8 – 98	7 – 49	7 – 70
220	P/Q/L	8	20	44 – AOR	8 – 98	7 – 53	7 – 72
220	P/Q/L	10	10	44 – AOR	10 – 98	9 – 46	9 – 66
220	P/Q/L	10	15	44 – AOR	10 – 98	9 – 48	9 – 69
220	P/Q/L	10	20	44 – AOR	10 – 98	9 – 52	9 – 71
220	P/Q/L	12	10	44 – AOR	12 – 98	11 – 46	11 – 65
220	P/Q/L	12	15	44 – AOR	12 – 98	11 – 48	11 – 69
220	P/Q/L	12	20	44 – AOR	12 – 98	11 – 52	11 – 71
240	P/Q/L	8	10	48 – AOR	8 – 98	7 – 47	7 – 68
240	P/Q/L	8	15	48 – AOR	8 – 98	7 – 49	7 – 70
240	P/Q/L	8	20	48 – AOR	8 – 98	7 – 53	7 – 72
240	P/Q/L	10	10	48 – AOR	10 – 98	9 – 46	9 – 66
240	P/Q/L	10	15	48 – AOR	10 – 98	9 – 48	9 – 69
240	P/Q/L	10	20	48 – AOR	10 – 98	9 – 52	9 – 71
240	P/Q/L	12	10	48 – AOR	12 – 98	11 – 46	11 – 65
240	P/Q/L	12	15	48 – AOR	12 – 98	11 – 48	11 – 69
240	P/Q/L	12	20	48 – AOR	12 – 98	11 – 52	11 – 71

Subject to technical modifications. All dimensions as well as the combination of the maximum values on request.
Design examples only.

Type BA
rigid connection with
bending roll size of 10 ds

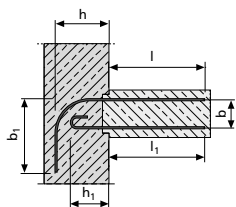


The dimensions e, h and l are variable depending on box width strip width and bar diameter.

Box width (mm)	Type P/Q/L	Rebar Ø 08/10/12	Rebar centres e (cm)	Stirrup width b ₁ (cm)	Stirrup height h (cm)	Lap length for box length	
						83 cm l (cm)	125 cm l (cm)
60	P	8	10	10 – AOR	12 – 98	max. 41	max. 41
60	P	8	15	10 – AOR	12 – 98	max. 45	max. 67
60	P	8	20	10 – AOR	12 – 98	max. 49	max. 69
60	P	10	10	12 – AOR	13 – 98	max. 31	max. 31
60	P	10	15	12 – AOR	13 – 98	max. 44	max. 46
60	P	10	20	12 – AOR	13 – 98	max. 48	max. 58
60	P	12	10	15 – AOR	14 – 98	max. 23	max. 23
60	P	12	15	15 – AOR	14 – 98	max. 35	max. 35
60	P	12	20	15 – AOR	14 – 98	max. 48	max. 51
80	P	8	10	10 – AOR	12 – 98	max. 43	max. 64
80	P	8	15	10 – AOR	12 – 98	max. 45	max. 67
80	P	8	20	10 – AOR	12 – 98	max. 49	max. 70
80	P	10	10	12 – AOR	13 – 98	max. 42	max. 45
80	P	10	15	12 – AOR	13 – 98	max. 45	max. 65
80	P	10	20	12 – AOR	13 – 98	max. 47	max. 68
80	P	12	10	15 – AOR	14 – 98	max. 38	max. 38
80	P	12	15	15 – AOR	14 – 98	max. 42	max. 58
80	P	12	20	15 – AOR	14 – 98	max. 48	max. 67
110	P/Q/L	8	10	10 – AOR	12 – 98	max. 44	max. 64
110	P/Q/L	8	15	10 – AOR	12 – 98	max. 46	max. 67
110	P/Q/L	8	20	10 – AOR	12 – 98	max. 49	max. 70
110	P/Q/L	10	10	12 – AOR	13 – 98	max. 43	max. 63
110	P/Q/L	10	15	12 – AOR	13 – 98	max. 44	max. 66
110	P/Q/L	10	20	12 – AOR	13 – 98	max. 48	max. 69
110	P/Q/L	12	10	15 – AOR	14 – 98	max. 43	max. 62
110	P/Q/L	12	15	15 – AOR	14 – 98	max. 44	max. 66
110	P/Q/L	12	20	15 – AOR	14 – 98	max. 48	max. 69

Subject to technical modifications. All dimensions as well as the combination of the maximum values on request.
Design examples only.

Type BA
with pressure
bar – rigid
connection



Type BA
with bending
roll size of
10 ds

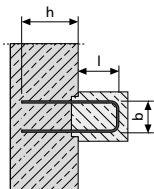
Also available
with different
bar diameters.

The dimensions e, b, b₁, h, h₁, l and l₁ are variable depending on box width strip width and bar diameter.

Box width	Type	Rebar Ø	Rebar centres	upper rebars				lower rebars					
				Stirrup width	Stirrup height	Lap length for box length		Rebar Ø	Rebar centres	Stirrup width	Stirrup height	Lap length for box length	
				b ₁ (cm)	h (cm)	83 cm	125 cm	Ø8/10/12	e (cm)	b (cm)	h ₁ (cm)	83 cm	125 cm
(mm)	P/Q/L	Ø8/10/12	e (cm)			l (cm)	l (cm)					l ₁ (cm)	l ₁ (cm)
110	P/Q/L	8	10	10-AOR	12 – 98	7 – 38	7 – 38	8	10	8		7 – 38	7 – 38
110	P/Q/L	8	15	10-AOR	12 – 98	7 – 45	7 – 61	8	15	8		7 – 45	7 – 61
110	P/Q/L	8	20	10-AOR	12 – 98	7 – 49	7 – 66	8	20	8		7 – 49	7 – 66
110	P/Q/L	10	10	12-AOR	13 – 98	9 – 29	9 – 29	10	10	8		9 – 29	9 – 29
110	P/Q/L	10	15	12-AOR	13 – 98	9 – 44	9 – 44	10	15	8		9 – 44	9 – 44
110	P/Q/L	10	20	12-AOR	13 – 98	9 – 48	9 – 57	10	20	8		9 – 48	9 – 57
110	P/Q/L	12	10	15-AOR	14 – 98	11 – 20	11 – 20	12	10	8		11 – 20	11 – 20
110	P/Q/L	12	15	15-AOR	14 – 98	11 – 33	11 – 33	12	15	8		11 – 33	11 – 33
110	P/Q/L	12	20	15-AOR	14 – 98	11 – 43	11 – 43	12	20	8		11 – 43	11 – 43
140	P/Q/L	8	10	10-AOR	12 – 98	7 – 44	7 – 54	8	10	11		7 – 44	7 – 54
140	P/Q/L	8	15	10-AOR	12 – 98	7 – 45	7 – 67	8	10	11		7 – 45	7 – 67
140	P/Q/L	8	20	10-AOR	12 – 98	7 – 49	7 – 69	8	10	11		7 – 49	7 – 69
140	P/Q/L	10	10	12-AOR	13 – 98	9 – 39	9 – 39	10	10	11		9 – 39	9 – 39
140	P/Q/L	10	15	12-AOR	13 – 98	9 – 44	9 – 60	10	15	11		9 – 44	9 – 60
140	P/Q/L	10	20	12-AOR	13 – 98	9 – 48	9 – 68	10	20	11		9 – 48	9 – 68
140	P/Q/L	12	10	15-AOR	14 – 98	11 – 31	11 – 31	12	10	11		11 – 31	11 – 31
140	P/Q/L	12	15	15-AOR	14 – 98	11 – 44	11 – 50	12	15	11		11 – 44	11 – 50
140	P/Q/L	12	20	15-AOR	14 – 98	11 – 48	11 – 68	12	20	11		11 – 48	11 – 68
160	P/Q/L	8	10	10-AOR	12 – 98	7 – 45	7 – 66	8	10	13		7 – 45	7 – 66
160	P/Q/L	8	15	10-AOR	12 – 98	7 – 45	7 – 66	8	15	13		7 – 45	7 – 66
160	P/Q/L	8	20	10-AOR	12 – 98	7 – 49	7 – 69	8	20	13		7 – 49	7 – 69
160	P/Q/L	10	10	12-AOR	13 – 98	9 – 43	9 – 49	10	10	13		9 – 43	9 – 49
160	P/Q/L	10	15	12-AOR	13 – 98	9 – 44	9 – 65	10	15	13		9 – 44	9 – 65
160	P/Q/L	10	20	12-AOR	13 – 98	9 – 48	9 – 68	10	20	13		9 – 48	9 – 68
160	P/Q/L	12	10	15-AOR	14 – 98	11 – 41	11 – 41	12	10	13		11 – 41	11 – 41
160	P/Q/L	12	15	15-AOR	14 – 98	11 – 44	11 – 61	12	15	13		11 – 44	11 – 61
160	P/Q/L	12	20	15-AOR	14 – 98	11 – 48	11 – 68	12	20	13		11 – 48	11 – 68
190	P/Q/L	8	10	10-AOR	12 – 98	7 – 44	7 – 65	8	10	16		7 – 44	7 – 65
190	P/Q/L	8	15	10-AOR	12 – 98	7 – 46	7 – 66	8	10	16		7 – 46	7 – 66
190	P/Q/L	8	20	10-AOR	12 – 98	7 – 49	7 – 70	8	10	16		7 – 49	7 – 70
190	P/Q/L	10	10	12-AOR	13 – 98	9 – 43	9 – 57	10	10	16		9 – 43	9 – 57
190	P/Q/L	10	15	12-AOR	13 – 98	9 – 45	9 – 65	10	15	16		9 – 45	9 – 65
190	P/Q/L	10	20	12-AOR	13 – 98	9 – 48	9 – 69	10	20	16		9 – 48	9 – 69
190	P/Q/L	12	10	15-AOR	14 – 98	11 – 43	11 – 50	12	10	16		11 – 43	11 – 50
190	P/Q/L	12	15	15-AOR	14 – 98	11 – 45	11 – 65	12	15	16		11 – 45	11 – 65
190	P/Q/L	12	20	15-AOR	14 – 98	11 – 48	11 – 69	12	20	16		11 – 48	11 – 69
220	P/Q/L	8	10	10-AOR	12 – 98	7 – 44	7 – 65	8	10	19		7 – 44	7 – 65
220	P/Q/L	8	15	10-AOR	12 – 98	7 – 46	7 – 66	8	15	19		7 – 46	7 – 66
220	P/Q/L	8	20	10-AOR	12 – 98	7 – 49	7 – 70	8	20	19		7 – 49	7 – 70
220	P/Q/L	10	10	12-AOR	13 – 98	9 – 43	9 – 64	10	10	19		9 – 43	9 – 64
220	P/Q/L	10	15	12-AOR	13 – 98	9 – 45	9 – 65	10	15	19		9 – 45	9 – 65
220	P/Q/L	10	20	12-AOR	13 – 98	9 – 48	9 – 69	10	20	19		9 – 48	9 – 69
220	P/Q/L	12	10	15-AOR	14 – 98	11 – 43	11 – 61	12	10	19		11 – 43	11 – 61
220	P/Q/L	12	15	15-AOR	14 – 98	11 – 45	11 – 65	12	15	19		11 – 45	11 – 65
220	P/Q/L	12	20	15-AOR	14 – 98	11 – 48	11 – 69	12	20	19		11 – 48	11 – 69
240	P/Q/L	8	10	10-AOR	12 – 98	7 – 44	7 – 65	8	10	21		7 – 44	7 – 65
240	P/Q/L	8	10	10-AOR	12 – 98	7 – 46	7 – 66	8	10	21		7 – 46	7 – 66
240	P/Q/L	8	15	10-AOR	12 – 98	7 – 49	7 – 70	8	10	21		7 – 49	7 – 70
240	P/Q/L	10	20	12-AOR	13 – 98	9 – 43	9 – 64	10	10	21		9 – 43	9 – 64
240	P/Q/L	10	15	12-AOR	13 – 98	9 – 45	9 – 65	10	15	21		9 – 45	9 – 65
240	P/Q/L	10	20	12-AOR	13 – 98	9 – 48	9 – 69	10	20	21		9 – 48	9 – 69
240	P/Q/L	12	10	15-AOR	14 – 98	11 – 43	11 – 65	12	10	21		11 – 43	11 – 65
240	P/Q/L	12	15	15-AOR	14 – 98	11 – 45	11 – 65	12	15	21		11 – 45	11 – 65
240	P/Q/L	12	20	15-AOR	14 – 98	11 – 48	11 – 69	12	20	21		11 – 48	11 – 69

Subject to technical modifications. All dimensions as well as the combination of the maximum values on request.
Design examples only.

Type KO
reverse ,U' bar



Depending on the dimensions *e* and *l* the stirrups inside the box will have a conical shape. Stirrups with the max. lap length will be delivered with 6 ds at the stirrup tip.

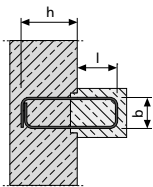
The dimensions *e*, *h* and *l* are variable depending on box width strip width and bar diameter.

**Type L only available with
b = 8, 11, 13, 16, 19 and 21**

Box width (mm)	Type P/Q/L	Rebar Ø 08/10/12	Rebar centres <i>e</i> (cm)	Stirrup width <i>b</i> (cm)	Stirrup height <i>h</i> (cm)	Lap length for box length	
						83 cm <i>l</i> (cm)	125 cm <i>l</i> (cm)
80	P	8	10	6	8 – 98	7 – 8	7 – 8
80	P	8	15	6	8 – 98	7 – 13	7 – 13
80	P	8	20	6	8 – 98	7 – 18	7 – 18
80	P	10	15	6	10 – 98	9 – 12	9 – 12
80	P	10	20	6	10 – 98	9 – 17	9 – 17
110	P/Q/L	8	10	8 – 9	8 – 98	7 – 18	7 – 18
110	P/Q/L	8	15	8 – 9	8 – 98	7 – 27	7 – 27
110	P/Q/L	8	20	8 – 9	8 – 98	7 – 36	7 – 36
110	P/Q/L	10	10	8 – 9	10 – 98	9 – 12	9 – 12
110	P/Q/L	10	15	8 – 9	10 – 98	9 – 18	9 – 18
110	P/Q/L	10	20	8 – 9	10 – 98	9 – 24	9 – 24
110	P/Q/L	12	15	8 – 9	12 – 98	11 – 12	11 – 12
110	P/Q/L	12	20	8 – 9	12 – 98	11 – 17	11 – 17
140	P/Q/L	8	10	11 – 12	8 – 98	7 – 32	7 – 32
140	P/Q/L	8	15	11 – 12	8 – 98	7 – 41.5	7 – 48
140	P/Q/L	8	20	11 – 12	8 – 98	7 – 41.5	7 – 62.5
140	P/Q/L	10	10	11 – 12	10 – 98	9 – 24	9 – 24
140	P/Q/L	10	15	11 – 12	10 – 98	9 – 35	9 – 35
140	P/Q/L	10	20	11 – 12	10 – 98	9 – 41.5	9 – 47
140	P/Q/L	12	10	11 – 12	12 – 98	11 – 14	11 – 14
140	P/Q/L	12	15	11 – 12	12 – 98	11 – 21	11 – 21
140	P/Q/L	12	20	11 – 12	12 – 98	11 – 28	11 – 28
160	P/Q/L	8	10	13 – 14	8 – 98	7 – 41	7 – 41
160	P/Q/L	8	15	13 – 14	8 – 98	7 – 41.5	7 – 61
160	P/Q/L	8	20	13 – 14	8 – 98	7 – 41.5	7 – 62.5
160	P/Q/L	10	10	13 – 14	10 – 98	9 – 31	9 – 31
160	P/Q/L	10	15	13 – 14	10 – 98	9 – 41.5	9 – 47
160	P/Q/L	10	20	13 – 14	10 – 98	9 – 41.5	9 – 62
160	P/Q/L	12	10	13 – 14	12 – 98	11 – 21	11 – 21
160	P/Q/L	12	15	13 – 14	12 – 98	11 – 31	11 – 31
160	P/Q/L	12	20	13 – 14	12 – 98	11 – 41	11 – 41
190	P/Q/L	8	10	16 – 17	8 – 98	7 – 41.5	7 – 54
190	P/Q/L	8	15	16 – 17	8 – 98	7 – 41.5	7 – 62.5
190	P/Q/L	8	20	16 – 17	8 – 98	7 – 41.5	7 – 62.5
190	P/Q/L	10	10	16 – 17	10 – 98	9 – 41.5	9 – 43
190	P/Q/L	10	15	16 – 17	10 – 98	9 – 41.5	9 – 62.5
190	P/Q/L	10	20	16 – 17	10 – 98	9 – 41.5	9 – 62.5
190	P/Q/L	12	10	16 – 17	12 – 98	11 – 31	11 – 31
190	P/Q/L	12	15	16 – 17	12 – 98	11 – 41.5	11 – 46
190	P/Q/L	12	20	16 – 17	12 – 98	11 – 41.5	11 – 61
220	P/Q/L	8	10	19 – 20	8 – 98	7 – 41.5	7 – 62.5
220	P/Q/L	8	15	19 – 20	8 – 98	7 – 41.5	7 – 62.5
220	P/Q/L	8	20	19 – 20	8 – 98	7 – 41.5	7 – 62.5
220	P/Q/L	10	10	19 – 20	10 – 98	9 – 41.5	9 – 51
220	P/Q/L	10	15	19 – 20	10 – 98	9 – 41.5	9 – 62.5
220	P/Q/L	10	20	19 – 20	10 – 98	9 – 41.5	9 – 62.5
220	P/Q/L	12	10	19 – 20	12 – 98	11 – 38	11 – 38
220	P/Q/L	12	15	19 – 20	12 – 98	11 – 41.5	11 – 56
220	P/Q/L	12	20	19 – 20	12 – 98	11 – 41.5	11 – 62.5
240	P/Q/L	8	10	21 – 22	8 – 98	7 – 41.5	7 – 62.5
240	P/Q/L	8	15	21 – 22	8 – 98	7 – 41.5	7 – 62.5
240	P/Q/L	8	20	21 – 22	8 – 98	7 – 41.5	7 – 62.5
240	P/Q/L	10	10	21 – 22	10 – 98	9 – 41.5	9 – 62
240	P/Q/L	10	15	21 – 22	10 – 98	9 – 41.5	9 – 62.5
240	P/Q/L	10	20	21 – 22	10 – 98	9 – 41.5	9 – 62.5
240	P/Q/L	12	10	21 – 22	12 – 98	11 – 41.5	11 – 48
240	P/Q/L	12	15	21 – 22	12 – 98	11 – 41.5	11 – 62.5
240	P/Q/L	12	20	21 – 22	12 – 98	11 – 41.5	11 – 62.5

Subject to technical modifications. All dimensions as well as the combination of the maximum values on request.
Design examples only.

Type K closed stirrup



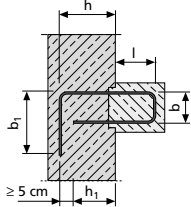
Depending on the dimensions *e* and *l* the stirrups inside the box will have a conical shape. Stirrups with the max. lap length will be delivered with 6 ds at the stirrup tip.

The dimensions *e*, *h* and *l* are variable depending on box width strip width and bar diameter.

Box width (mm)	Type P/Q/L	Rebar Ø 08/10/12	Rebar centres <i>e</i> (cm)	Stirrup width <i>b</i> (cm)	Stirrup height <i>h</i> (cm)	Lap length for box length	
						83 cm <i>l</i> (cm)	125 cm <i>l</i> (cm)
110	P/Q	8	10	9	8 – AOR	7 – 18	7 – 18
110	P/Q	8	15	9	8 – AOR	7 – 27	7 – 27
110	P/Q	8	20	9	8 – AOR	7 – 36	7 – 36
110	P/Q	10	10	9	10 – AOR	9 – 12	9 – 12
110	P/Q	10	15	9	10 – AOR	9 – 18	9 – 18
110	P/Q	10	20	9	10 – AOR	9 – 24	9 – 24
110	P/Q	12	15	9	12 – AOR	11 – 12	11 – 12
110	P/Q	12	20	9	12 – AOR	11 – 17	11 – 17
140	P/Q	8	10	12	8 – AOR	7 – 32	7 – 32
140	P/Q	8	15	12	8 – AOR	7 – 41.5	7 – 48
140	P/Q	8	20	12	8 – AOR	7 – 41.5	7 – 62.5
140	P/Q	10	10	12	10 – AOR	9 – 24	9 – 24
140	P/Q	10	15	12	10 – AOR	9 – 35	9 – 35
140	P/Q	10	20	12	10 – AOR	9 – 41.5	9 – 47
140	P/Q	12	10	12	12 – AOR	11 – 14	11 – 14
140	P/Q	12	15	12	12 – AOR	11 – 21	11 – 21
140	P/Q	12	20	12	12 – AOR	11 – 28	11 – 28
160	P/Q	8	10	14	8 – AOR	7 – 41	7 – 41
160	P/Q	8	15	14	8 – AOR	7 – 41.5	7 – 61
160	P/Q	8	20	14	8 – AOR	7 – 41.5	7 – 62.5
160	P/Q	10	10	14	10 – AOR	9 – 31	9 – 31
160	P/Q	10	15	14	10 – AOR	9 – 41.5	9 – 47
160	P/Q	10	20	14	10 – AOR	9 – 41.5	9 – 62
160	P/Q	12	10	14	12 – AOR	11 – 21	11 – 21
160	P/Q	12	15	14	12 – AOR	11 – 31	11 – 31
160	P/Q	12	20	14	12 – AOR	11 – 41	11 – 41
190	P/Q	8	10	17	8 – AOR	7 – 41.5	7 – 54
190	P/Q	8	15	17	8 – AOR	7 – 41.5	7 – 62.5
190	P/Q	8	20	17	8 – AOR	7 – 41.5	7 – 62.5
190	P/Q	10	10	17	10 – AOR	9 – 41.5	9 – 43
190	P/Q	10	15	17	10 – AOR	9 – 41.5	9 – 62.5
190	P/Q	10	20	17	10 – AOR	9 – 41.5	9 – 62.5
190	P/Q	12	10	17	12 – AOR	11 – 31	11 – 31
190	P/Q	12	15	17	12 – AOR	11 – 41.5	11 – 46
190	P/Q	12	20	17	12 – AOR	11 – 41.5	11 – 61
240	P/Q	8	10	22	8 – AOR	7 – 41.5	7 – 62.5
240	P/Q	8	15	22	8 – AOR	7 – 41.5	7 – 62.5
240	P/Q	8	20	22	8 – AOR	7 – 41.5	7 – 62.5
240	P/Q	10	10	22	10 – AOR	9 – 41.5	9 – 62
240	P/Q	10	15	22	10 – AOR	9 – 41.5	9 – 62.5
240	P/Q	10	20	22	10 – AOR	9 – 41.5	9 – 62.5
240	P/Q	12	10	22	12 – AOR	11 – 41.5	11 – 48
240	P/Q	12	15	22	12 – AOR	11 – 41.5	11 – 62.5
240	P/Q	12	20	22	12 – AOR	11 – 41.5	11 – 62.5

Subject to technical modifications. All dimensions as well as the combination of the maximum values on request.
Design examples only.

Type KH
half-opened stirrup
 $h_1 \text{ max.} = h - 5 \text{ cm}$



Also available with bending
roll 10 ds.

Depending on the dimensions
 e and l the stirrups inside the
box will have a conical shape.
Stirrups with the max. lap
length will be delivered with
6 ds at the stirrup tip.

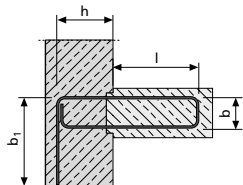
The dimensions e , h and l are
variable depending on box width
strip width and bar diameter.

Type L only available with
 $b = 8, 11, 13, 16, 19$ and 21

Box width	Type	Rebar Ø	Rebar centres	Stirrup width	Stirrup height	Stirrup width	Stirrup height	Lap length for box length	
								83 cm	125 cm
(mm)	P/Q/L	08/10/12	e (cm)	b_1 (cm)	h (cm)	b (cm)	h_1 (cm)	l (cm)	l (cm)
80	P	8	10	8 – AOR	13 – AOR	6	8 – AOR	7 – 8	7 – 8
80	P	8	15	8 – AOR	13 – AOR	6	8 – AOR	7 – 13	7 – 13
80	P	8	20	8 – AOR	13 – AOR	6	8 – AOR	7 – 18	7 – 18
80	P	10	15	8 – AOR	15 – AOR	6	10 – AOR	9 – 12	9 – 12
80	P	10	20	8 – AOR	15 – AOR	6	10 – AOR	9 – 17	9 – 17
110	P/Q/L	8	10	8 – AOR	13 – AOR	8	8 – AOR	7 – 18	7 – 18
110	P/Q/L	8	15	8 – AOR	13 – AOR	8	8 – AOR	7 – 27	7 – 27
110	P/Q/L	8	20	8 – AOR	13 – AOR	8	8 – AOR	7 – 36	7 – 36
110	P/Q/L	10	10	8 – AOR	15 – AOR	8	10 – AOR	9 – 12	9 – 12
110	P/Q/L	10	15	8 – AOR	15 – AOR	8	10 – AOR	9 – 18	9 – 18
110	P/Q/L	10	20	8 – AOR	15 – AOR	8	10 – AOR	9 – 24	9 – 24
110	P/Q/L	12	15	8 – AOR	17 – AOR	8	12 – AOR	11 – 12	11 – 12
110	P/Q/L	12	20	8 – AOR	17 – AOR	8	12 – AOR	11 – 17	11 – 17
140	P/Q/L	8	10	8 – AOR	13 – AOR	11	8 – AOR	7 – 32	7 – 32
140	P/Q/L	8	15	8 – AOR	13 – AOR	11	8 – AOR	7 – 41.5	7 – 48
140	P/Q/L	8	20	8 – AOR	13 – AOR	11	8 – AOR	7 – 41.5	7 – 62.5
140	P/Q/L	10	10	8 – AOR	15 – AOR	11	10 – AOR	9 – 24	9 – 24
140	P/Q/L	10	15	8 – AOR	15 – AOR	11	10 – AOR	9 – 35	9 – 35
140	P/Q/L	10	20	8 – AOR	15 – AOR	11	10 – AOR	9 – 41.5	9 – 47
140	P/Q/L	12	10	8 – AOR	17 – AOR	11	12 – AOR	11 – 14	11 – 14
140	P/Q/L	12	15	8 – AOR	17 – AOR	11	12 – AOR	11 – 21	11 – 21
140	P/Q/L	12	20	8 – AOR	17 – AOR	11	12 – AOR	11 – 28	11 – 28
160	P/Q/L	8	10	8 – AOR	13 – AOR	13	8 – AOR	7 – 41	7 – 41
160	P/Q/L	8	15	8 – AOR	13 – AOR	13	8 – AOR	7 – 41.5	7 – 61
160	P/Q/L	8	20	8 – AOR	13 – AOR	13	8 – AOR	7 – 41.5	7 – 62.5
160	P/Q/L	10	10	8 – AOR	15 – AOR	13	10 – AOR	9 – 31	9 – 31
160	P/Q/L	10	15	8 – AOR	15 – AOR	13	10 – AOR	9 – 41.5	9 – 47
160	P/Q/L	10	20	8 – AOR	15 – AOR	13	10 – AOR	9 – 41.5	9 – 62
160	P/Q/L	12	10	8 – AOR	17 – AOR	13	12 – AOR	11 – 21	11 – 21
160	P/Q/L	12	15	8 – AOR	17 – AOR	13	12 – AOR	11 – 31	11 – 31
160	P/Q/L	12	20	8 – AOR	17 – AOR	13	12 – AOR	11 – 41	11 – 41
190	P/Q/L	8	10	8 – AOR	13 – AOR	16	8 – AOR	7 – 41.5	7 – 54
190	P/Q/L	8	15	8 – AOR	13 – AOR	16	8 – AOR	7 – 41.5	7 – 62.5
190	P/Q/L	8	20	8 – AOR	13 – AOR	16	8 – AOR	7 – 41.5	7 – 62.5
190	P/Q/L	10	10	8 – AOR	15 – AOR	16	10 – AOR	9 – 41.5	9 – 43
190	P/Q/L	10	15	8 – AOR	15 – AOR	16	10 – AOR	9 – 41.5	9 – 62.5
190	P/Q/L	10	20	8 – AOR	15 – AOR	16	10 – AOR	9 – 41.5	9 – 62.5
190	P/Q/L	12	10	8 – AOR	17 – AOR	16	12 – AOR	11 – 31	11 – 31
190	P/Q/L	12	15	8 – AOR	17 – AOR	16	12 – AOR	11 – 41.5	11 – 46
190	P/Q/L	12	20	8 – AOR	17 – AOR	16	12 – AOR	11 – 41.5	11 – 61
220	P/Q/L	8	10	8 – AOR	13 – AOR	19	8 – AOR	7 – 41.5	7 – 62.5
220	P/Q/L	8	15	8 – AOR	13 – AOR	19	8 – AOR	7 – 41.5	7 – 62.5
220	P/Q/L	8	20	8 – AOR	13 – AOR	19	8 – AOR	7 – 41.5	7 – 62.5
220	P/Q/L	10	10	8 – AOR	15 – AOR	19	10 – AOR	9 – 41.5	9 – 51
220	P/Q/L	10	15	8 – AOR	15 – AOR	19	10 – AOR	9 – 41.5	9 – 62.5
220	P/Q/L	10	20	8 – AOR	15 – AOR	19	10 – AOR	9 – 41.5	9 – 62.5
220	P/Q/L	12	10	8 – AOR	17 – AOR	19	12 – AOR	11 – 38	11 – 38
220	P/Q/L	12	15	8 – AOR	17 – AOR	19	12 – AOR	11 – 41.5	11 – 56
220	P/Q/L	12	20	8 – AOR	17 – AOR	19	12 – AOR	11 – 41.5	11 – 62.5
240	P/Q/L	8	10	8 – AOR	13 – AOR	21	8 – AOR	7 – 41.5	7 – 62.5
240	P/Q/L	8	15	8 – AOR	13 – AOR	21	8 – AOR	7 – 41.5	7 – 62.5
240	P/Q/L	8	20	8 – AOR	13 – AOR	21	8 – AOR	7 – 41.5	7 – 62.5
240	P/Q/L	10	10	8 – AOR	15 – AOR	21	10 – AOR	9 – 41.5	9 – 62
240	P/Q/L	10	15	8 – AOR	15 – AOR	21	10 – AOR	9 – 41.5	9 – 62.5
240	P/Q/L	10	20	8 – AOR	15 – AOR	21	10 – AOR	9 – 41.5	9 – 62.5
240	P/Q/L	12	10	8 – AOR	17 – AOR	21	12 – AOR	11 – 41.5	11 – 48
240	P/Q/L	12	15	8 – AOR	17 – AOR	21	12 – AOR	11 – 41.5	11 – 62.5
240	P/Q/L	12	20	8 – AOR	17 – AOR	21	12 – AOR	11 – 41.5	11 – 62.5

Subject to technical modifications. All dimensions as well as the combination of the maximum values on request.
Design examples only.

Type BK
closed stirrup with
downward leg



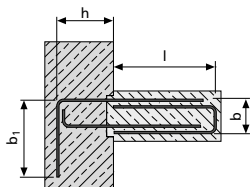
Depending on the dimensions e and l the stirrups inside the box will have a conical shape. Stirrups with the max. lap length will be delivered with 6 ds at the stirrup tip.

The dimensions e, b, b₁, h and l are variable depending on box width strip width and bar diameter.

Box width (mm)	Type P/Q/L	Rebar Ø 08/10/12	Rebar centres e (cm)	Stirrup width b ₁ (cm)	Stirrup height h (cm)	Stirrup width b (cm)	Lap length for box length	
							83 cm l (cm)	125 cm l (cm)
110	P/Q	8	10	9 – AOR	8 – AOR	9	7 – 18	7 – 18
110	P/Q	8	15	9 – AOR	8 – AOR	9	7 – 27	7 – 27
110	P/Q	8	20	9 – AOR	8 – AOR	9	7 – 36	7 – 36
110	P/Q	10	10	9 – AOR	10 – AOR	9	9 – 12	9 – 12
110	P/Q	10	15	9 – AOR	10 – AOR	9	9 – 18	9 – 18
110	P/Q	10	20	9 – AOR	10 – AOR	9	9 – 24	9 – 24
110	P/Q	12	15	9 – AOR	12 – AOR	9	11 – 12	11 – 12
110	P/Q	12	20	9 – AOR	12 – AOR	9	11 – 17	11 – 17
140	P/Q	8	10	9 – AOR	8 – AOR	12	7 – 32	7 – 32
140	P/Q	8	15	9 – AOR	8 – AOR	12	7 – 41.5	7 – 48
140	P/Q	8	20	9 – AOR	8 – AOR	12	7 – 41.5	7 – 62.5
140	P/Q	10	10	9 – AOR	10 – AOR	12	9 – 24	9 – 24
140	P/Q	10	15	9 – AOR	10 – AOR	12	9 – 35	9 – 35
140	P/Q	10	20	9 – AOR	10 – AOR	12	9 – 41.5	9 – 47
140	P/Q	12	10	9 – AOR	12 – AOR	12	11 – 14	11 – 14
140	P/Q	12	15	9 – AOR	12 – AOR	12	11 – 21	11 – 21
140	P/Q	12	20	9 – AOR	12 – AOR	12	11 – 28	11 – 28
160	P/Q	8	10	9 – AOR	8 – AOR	14	7 – 41	7 – 41
160	P/Q	8	15	9 – AOR	8 – AOR	14	7 – 41.5	7 – 61
160	P/Q	8	20	9 – AOR	8 – AOR	14	7 – 41.5	7 – 62.5
160	P/Q	10	10	9 – AOR	10 – AOR	14	9 – 31	9 – 31
160	P/Q	10	15	9 – AOR	10 – AOR	14	9 – 41.5	9 – 47
160	P/Q	10	20	9 – AOR	10 – AOR	14	9 – 41.5	9 – 62
160	P/Q	12	10	9 – AOR	12 – AOR	14	11 – 21	11 – 21
160	P/Q	12	15	9 – AOR	12 – AOR	14	11 – 31	11 – 31
160	P/Q	12	20	9 – AOR	12 – AOR	14	11 – 41	11 – 41
190	P/Q	8	10	9 – AOR	8 – AOR	17	7 – 41.5	7 – 54
190	P/Q	8	15	9 – AOR	8 – AOR	17	7 – 41.5	7 – 62.5
190	P/Q	8	20	9 – AOR	8 – AOR	17	7 – 41.5	7 – 62.5
190	P/Q	10	10	9 – AOR	10 – AOR	17	9 – 41.5	9 – 43
190	P/Q	10	15	9 – AOR	10 – AOR	17	9 – 41.5	9 – 62.5
190	P/Q	10	20	9 – AOR	10 – AOR	17	9 – 41.5	9 – 62.5
190	P/Q	12	10	9 – AOR	12 – AOR	17	11 – 31	11 – 31
190	P/Q	12	15	9 – AOR	12 – AOR	17	11 – 41.5	11 – 46
190	P/Q	12	20	9 – AOR	12 – AOR	17	11 – 41.5	11 – 61
240	P/Q	8	10	9 – AOR	8 – AOR	22	7 – 41.5	7 – 62.5
240	P/Q	8	15	9 – AOR	8 – AOR	22	7 – 41.5	7 – 62.5
240	P/Q	8	20	9 – AOR	8 – AOR	22	7 – 41.5	7 – 62.5
240	P/Q	10	10	9 – AOR	10 – AOR	22	9 – 41.5	9 – 62
240	P/Q	10	15	9 – AOR	10 – AOR	22	9 – 41.5	9 – 62.5
240	P/Q	10	20	9 – AOR	10 – AOR	22	9 – 41.5	9 – 62.5
240	P/Q	12	10	9 – AOR	12 – AOR	22	11 – 41.5	11 – 48
240	P/Q	12	15	9 – AOR	12 – AOR	22	11 – 41.5	11 – 62.5
240	P/Q	12	20	9 – AOR	12 – AOR	22	11 – 41.5	11 – 62.5

Subject to technical modifications. All dimensions as well as the combination of the maximum values on request.
Design examples only.

Type KHS
stirrup for large projecting consoles with additional ,U' stirrup



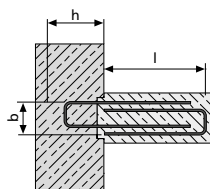
The additional U-stirrup will be supplied by BETOMAX® systems automatically. After rebending the overlap bars the additional U-stirrup has to be mounted on the rebars by using fixing wire.

The dimensions e , b , b_1 , h and l are variable depending on box width strip width and bar diameter.

Box width (mm)	Type P/Q/L	Rebar Ø 08/10/12	Rebar centres e (cm)	Stirrup width b_1 (cm)	Stirrup height h (cm)	Stirrup width b (cm)	Lap length for box length	
							83 cm l (cm)	125 cm l (cm)
80	P	8	10	10 – AOR	8 – 98	6	max. 20	max. 20
80	P	8	15	10 – AOR	8 – 98	6	max. 31	max. 31
80	P	8	20	10 – AOR	8 – 98	6	max. 41.5	max. 42
80	P	10	10	12 – AOR	10 – 98	6	max. 14	max. 14
80	P	10	15	12 – AOR	10 – 98	6	max. 23	max. 23
80	P	10	20	12 – AOR	10 – 98	6	max. 31	max. 31
110	P/Q/L	8	10	10 – AOR	8 – 98	8	max. 30	max. 30
110	P/Q/L	8	15	10 – AOR	8 – 98	8	max. 41.5	max. 46
110	P/Q/L	8	20	10 – AOR	8 – 98	8	max. 41.5	max. 62
110	P/Q/L	10	10	12 – AOR	10 – 98	8	max. 23	max. 23
110	P/Q/L	10	15	12 – AOR	10 – 98	8	max. 35	max. 35
110	P/Q/L	10	20	12 – AOR	10 – 98	8	max. 41.5	max. 48
110	P/Q/L	12	10	15 – AOR	12 – 98	8	max. 18	max. 18
110	P/Q/L	12	15	15 – AOR	12 – 98	8	max. 28	max. 28
110	P/Q/L	12	20	15 – AOR	12 – 98	8	max. 38	max. 38
140	P/Q/L	8	10	10 – AOR	8 – 98	11	max. 41.5	max. 45
140	P/Q/L	8	15	10 – AOR	8 – 98	11	max. 41.5	max. 62.5
140	P/Q/L	8	20	10 – AOR	8 – 98	11	max. 41.5	max. 62.5
140	P/Q/L	10	10	12 – AOR	10 – 98	11	max. 35	max. 35
140	P/Q/L	10	15	12 – AOR	10 – 98	11	max. 41.5	max. 54
140	P/Q/L	10	20	12 – AOR	10 – 98	11	max. 41.5	max. 62.5
140	P/Q/L	12	10	15 – AOR	12 – 98	11	max. 28	max. 28
140	P/Q/L	12	15	15 – AOR	12 – 98	11	max. 41.5	max. 44
140	P/Q/L	12	20	15 – AOR	12 – 98	11	max. 41.5	max. 59
160	P/Q/L	8	10	10 – AOR	8 – 98	13	max. 41.5	max. 55
160	P/Q/L	8	15	10 – AOR	8 – 98	13	max. 41.5	max. 62.5
160	P/Q/L	8	20	10 – AOR	8 – 98	13	max. 41.5	max. 62.5
160	P/Q/L	10	10	12 – AOR	10 – 98	13	max. 41.5	max. 44
160	P/Q/L	10	15	12 – AOR	10 – 98	13	max. 41.5	max. 62.5
160	P/Q/L	10	20	12 – AOR	10 – 98	13	max. 41.5	max. 62.5
160	P/Q/L	12	10	15 – AOR	12 – 98	13	max. 36	max. 36
160	P/Q/L	12	15	15 – AOR	12 – 98	13	max. 41.5	max. 54
160	P/Q/L	12	20	15 – AOR	12 – 98	13	max. 41.5	max. 62.5
190	P/Q/L	8	10	10 – AOR	8 – 98	16	max. 41.5	max. 62.5
190	P/Q/L	8	15	10 – AOR	8 – 98	16	max. 41.5	max. 62.5
190	P/Q/L	8	20	10 – AOR	8 – 98	16	max. 41.5	max. 62.5
190	P/Q/L	10	10	12 – AOR	10 – 98	16	max. 41.5	max. 56
190	P/Q/L	10	15	12 – AOR	10 – 98	16	max. 41.5	max. 62.5
190	P/Q/L	10	20	12 – AOR	10 – 98	16	max. 41.5	max. 62.5
190	P/Q/L	12	10	15 – AOR	12 – 98	16	max. 41.5	max. 46
190	P/Q/L	12	15	15 – AOR	12 – 98	16	max. 41.5	max. 62.5
190	P/Q/L	12	20	15 – AOR	12 – 98	16	max. 41.5	max. 62.5
220	P/Q/L	8	10	10 – AOR	8 – 98	19	max. 41.5	max. 62.5
220	P/Q/L	8	15	10 – AOR	8 – 98	19	max. 41.5	max. 62.5
220	P/Q/L	8	20	10 – AOR	8 – 98	19	max. 41.5	max. 62.5
220	P/Q/L	10	10	12 – AOR	10 – 98	19	max. 41.5	max. 62.5
220	P/Q/L	10	15	12 – AOR	10 – 98	19	max. 41.5	max. 62.5
220	P/Q/L	10	20	12 – AOR	10 – 98	19	max. 41.5	max. 62.5
220	P/Q/L	12	10	15 – AOR	12 – 98	19	max. 41.5	max. 57
220	P/Q/L	12	15	15 – AOR	12 – 98	19	max. 41.5	max. 62.5
220	P/Q/L	12	20	15 – AOR	12 – 98	19	max. 41.5	max. 62.5
240	P/Q/L	8	10	10 – AOR	8 – 98	21	max. 41.5	max. 62.5
240	P/Q/L	8	15	10 – AOR	8 – 98	21	max. 41.5	max. 62.5
240	P/Q/L	8	20	10 – AOR	8 – 98	21	max. 41.5	max. 62.5
240	P/Q/L	10	10	12 – AOR	10 – 98	21	max. 41.5	max. 62.5
240	P/Q/L	10	15	12 – AOR	10 – 98	21	max. 41.5	max. 62.5
240	P/Q/L	10	20	12 – AOR	10 – 98	21	max. 41.5	max. 62.5
240	P/Q/L	12	10	15 – AOR	12 – 98	21	max. 41.5	max. 62.5
240	P/Q/L	12	15	15 – AOR	12 – 98	21	max. 41.5	max. 62.5
240	P/Q/L	12	20	15 – AOR	12 – 98	21	max. 41.5	max. 62.5

Subject to technical modifications. All dimensions as well as the combination of the maximum values on request.
Design examples only.

Type KS
reverse U-stirrup for
large projecting consoles
with additional U-stirrup



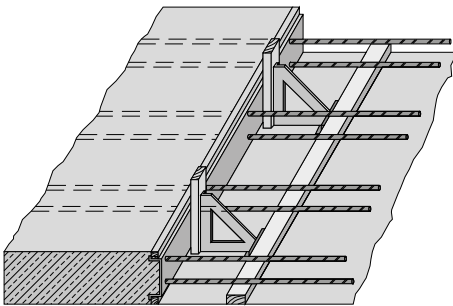
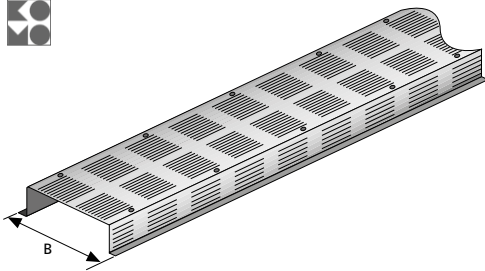
The additional U-stirrup will be supplied by BETOMAX® systems automatically. After rebending the overlap bars the additional U-stirrup has to be mounted on the rebars by using fixing wire.

The dimensions e, h and l are variable depending on box width strip width and bar diameter.

Box width (mm)	Type	Rebar Ø 08/10/12	Rebar centres e (cm)	Stirrup height h (cm)	Stirrup width b (cm)	Lap length for box length	
						83 cm l (cm)	125 cm l (cm)
80	P	8	10	8 – 98	6	max. 20	max. 20
80	P	8	15	8 – 98	6	max. 31	max. 31
80	P	8	20	8 – 98	6	max. 41.5	max. 42
80	P	10	10	10 – 98	6	max. 14	max. 14
80	P	10	15	10 – 98	6	max. 23	max. 23
80	P	10	20	10 – 98	6	max. 31	max. 31
110	P/Q/L	8	10	8 – 98	8	max. 30	max. 30
110	P/Q/L	8	15	8 – 98	8	max. 41.5	max. 46
110	P/Q/L	8	20	8 – 98	8	max. 41.5	max. 62
110	P/Q/L	10	10	10 – 98	8	max. 23	max. 23
110	P/Q/L	10	15	10 – 98	8	max. 35	max. 35
110	P/Q/L	10	20	10 – 98	8	max. 41.5	max. 48
110	P/Q/L	12	10	12 – 98	8	max. 18	max. 18
110	P/Q/L	12	15	12 – 98	8	max. 28	max. 28
110	P/Q/L	12	20	12 – 98	8	max. 38	max. 38
140	P/Q/L	8	10	8 – 98	11	max. 41.5	max. 45
140	P/Q/L	8	15	8 – 98	11	max. 41.5	max. 62.5
140	P/Q/L	8	20	8 – 98	11	max. 41.5	max. 62.5
140	P/Q/L	10	10	10 – 98	11	max. 35	max. 35
140	P/Q/L	10	15	10 – 98	11	max. 41.5	max. 54
140	P/Q/L	10	20	10 – 98	11	max. 41.5	max. 62.5
140	P/Q/L	12	10	12 – 98	11	max. 28	max. 28
140	P/Q/L	12	15	12 – 98	11	max. 41.5	max. 44
140	P/Q/L	12	20	12 – 98	11	max. 41.5	max. 59
160	P/Q/L	8	10	8 – 98	13	max. 41.5	max. 55
160	P/Q/L	8	15	8 – 98	13	max. 41.5	max. 62.5
160	P/Q/L	8	20	8 – 98	13	max. 41.5	max. 62.5
160	P/Q/L	10	10	10 – 98	13	max. 41.5	max. 44
160	P/Q/L	10	15	10 – 98	13	max. 41.5	max. 62.5
160	P/Q/L	10	20	10 – 98	13	max. 41.5	max. 62.5
160	P/Q/L	12	10	12 – 98	13	max. 36	max. 36
160	P/Q/L	12	15	12 – 98	13	max. 41.5	max. 54
160	P/Q/L	12	20	12 – 98	13	max. 41.5	max. 62.5
190	P/Q/L	8	10	8 – 98	16	max. 41.5	max. 62.5
190	P/Q/L	8	15	8 – 98	16	max. 41.5	max. 62.5
190	P/Q/L	8	20	8 – 98	16	max. 41.5	max. 62.5
190	P/Q/L	10	10	10 – 98	16	max. 41.5	max. 56
190	P/Q/L	10	15	10 – 98	16	max. 41.5	max. 62.5
190	P/Q/L	10	20	10 – 98	16	max. 41.5	max. 62.5
190	P/Q/L	12	10	12 – 98	16	max. 41.5	max. 46
190	P/Q/L	12	15	12 – 98	16	max. 41.5	max. 62.5
190	P/Q/L	12	20	12 – 98	16	max. 41.5	max. 62.5
220	P/Q/L	8	10	8 – 98	19	max. 41.5	max. 62.5
220	P/Q/L	8	15	8 – 98	19	max. 41.5	max. 62.5
220	P/Q/L	8	20	8 – 98	19	max. 41.5	max. 62.5
220	P/Q/L	10	10	10 – 98	19	max. 41.5	max. 62.5
220	P/Q/L	10	15	10 – 98	19	max. 41.5	max. 62.5
220	P/Q/L	10	20	10 – 98	19	max. 41.5	max. 62.5
220	P/Q/L	12	10	12 – 98	19	max. 41.5	max. 57
220	P/Q/L	12	15	12 – 98	19	max. 41.5	max. 62.5
220	P/Q/L	12	20	12 – 98	19	max. 41.5	max. 62.5
240	P/Q/L	8	10	8 – 98	21	max. 41.5	max. 62.5
240	P/Q/L	8	15	8 – 98	21	max. 41.5	max. 62.5
240	P/Q/L	8	20	8 – 98	21	max. 41.5	max. 62.5
240	P/Q/L	10	10	10 – 98	21	max. 41.5	max. 62.5
240	P/Q/L	10	15	10 – 98	21	max. 41.5	max. 62.5
240	P/Q/L	10	20	10 – 98	21	max. 41.5	max. 62.5
240	P/Q/L	12	10	12 – 98	21	max. 41.5	max. 62.5
240	P/Q/L	12	15	12 – 98	21	max. 41.5	max. 62.5
240	P/Q/L	12	20	12 – 98	21	max. 41.5	max. 62.5

Subject to technical modifications. All dimensions as well as the combination of the maximum values on request.
Design examples only.

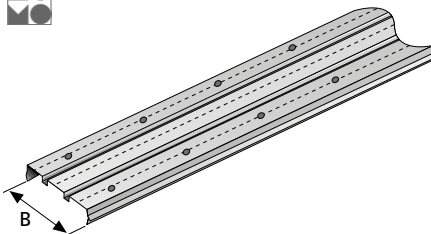
COMAX® shuttering strip P



Item No.	Designation	Width B mm	Packing unit	Weight kg/lin. m
42060000	Shuttering strip P	60	lin. m	0.639
42080000	Shuttering strip P	80	lin. m	0.720
42110000	Shuttering strip P	110	lin. m	0.879
42140000	Shuttering strip P	140	lin. m	1.056
42160000	Shuttering strip P	160	lin. m	1.200
42190000	Shuttering strip P	190	lin. m	1.420
42220000	Shuttering strip P	220	lin. m	1.630
42240000	Shuttering strip P	240	lin. m	1.630

- Outstanding compatibility ensured by profiling and perforation
- Standard lengths of 0.83, 1.25 and 2.50 m
- Other lengths on request
- Various hole diameters and spacings available
- No removal of or partial chiselling away from shuttering
- Perforation free of charge with standard lengths

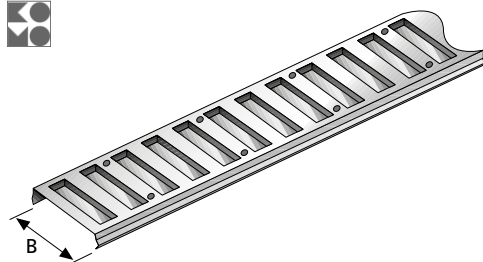
COMAX® shuttering strip Q



Item No.	Designation	Width B mm	Packing unit	Weight kg/lin. m
57110000	Shuttering strip Q	110	lin. m	0.856
57140000	Shuttering strip Q	140	lin. m	1.024
57160000	Shuttering strip Q	160	lin. m	1.128
57190000	Shuttering strip Q	190	lin. m	1.236
57220000	Shuttering strip Q	220	lin. m	1.324
57240000	Shuttering strip Q	240	lin. m	1.368

- The COMAX® shuttering strip Q is classed as „TOOTHED“ in accordance with EC 2
- Standard lengths of 1.25 m
- Other lengths on request
- Various hole diameters and spacings available

COMAX® shuttering strip L



Item No.	Designation	Width B mm	Packing unit	Weight kg/lin. m
58110000	Shuttering strip L	110	lin. m	0.896
58140000	Shuttering strip L	140	lin. m	1.144
58160000	Shuttering strip L	160	lin. m	1.240
58190000	Shuttering strip L	190	lin. m	1.372
58220000	Shuttering strip L	220	lin. m	1.540
58240000	Shuttering strip L	240	lin. m	1.696

- The COMAX® shuttering strip L is classed as „TOOTHED“ in accordance with EC 2
- Standard lengths of 1.25 m
- Other lengths on request
- Various hole diameters and spacings available
- Other widths on request

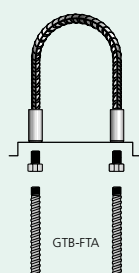
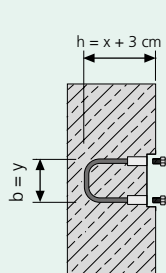
COMAX® GTB – Applications, properties, benefits

COMAX® GTB, The best of both worlds. It is the logical extension of our well-known reinforcement technologies that combines both the broad range of diameters of our coupler system **GripTec® GTB** and the surplus of the joint design of our continuity strip system **COMAX®**.

COMAX® GTB offers the possibility of providing longer lap lengths and a wide range of high-scaled diameters (Ø 12 mm – 25 mm). Further, it does not affect the profile of reinforcing steel and guarantees a full force transmission in tensile and compression. **COMAX® GTB** is also approved for structural and dynamic load applications. **COMAX® GTB** is a highly economic solution, which is particularly suitable for a quick and fast installation of huge coupler quantities with a pre-defined spacing on site. The pre-fabricated elements lower the installation time significantly by guaranteeing a structural joint design at the same time (acc. to EC 2 “smooth” or “toothed”).

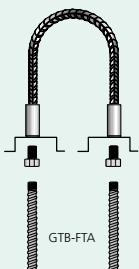
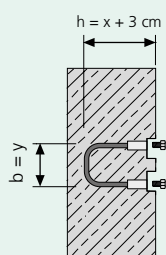
COMAX® GTB – The faster continuity strip system

The industrial pre-fabricated **COMAX® GTB** screw connection system element is a combined application for structural and dynamic load transmission.



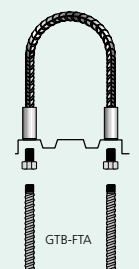
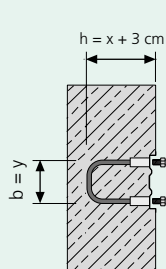
COMAX® P, Q and L - GTB

- Standard box length: 1,25 m (different length on demand)
- Couplers are completely embedded within the first concrete section
- Extremely solid application due to screwed on couplers
- Huge variety of special elements with a different stirrup design or single bar measurements on demand



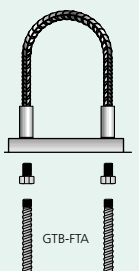
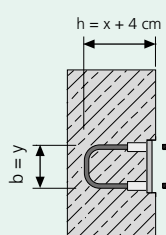
COMAX® P - GTB

- Box height 30 mm
- The decisive advantage for the designer: Perfect concrete bonding due to our perforated and ribbed sheet metal plate
- The pivotal advantage for the builders: Fast stripping of formwork and no need for supplementary tools owed to our proven zip-cover technology
- Suitable for the use with **BETOMAX® injection systems**
- High penetrability of grouting



COMAX® Q - GTB

- Box height 30 mm
- Toothing in longitudinal direction guarantees an ideal force transmission vertical to the joint
- The decisive advantage for the designer: **COMAX® Q-GTB** is classified as “toothed” acc. to EC 2
- The pivotal advantage for the builders: Fast stripping of formwork and no need for supplementary tools owed to our proven zip-cover technology

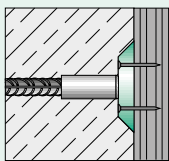
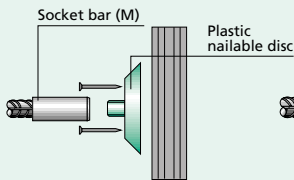


COMAX® L - GTB

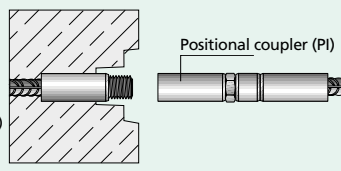
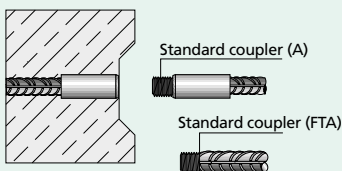
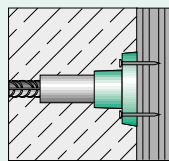
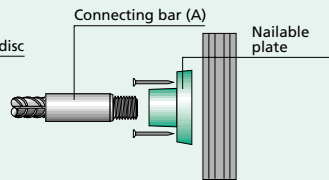
- Box height 46 mm
- Toothing in transverse direction allows an ideal force transmission parallel to the joint
- The decisive advantage for the designer: **COMAX® L-GTB** is classified as “toothed” acc. to EC 2
- The pivotal advantage for the builders: Fast stripping of formwork and no need for supplementary tools owed to our stable cover

GripTec GTB – Applications, properties, benefits

Installation with nailable disc

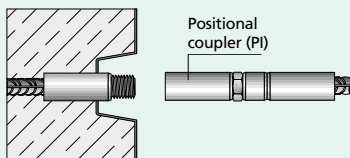
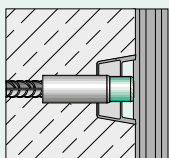
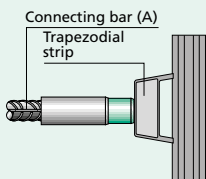


Installation with nailable plate



GripTec GTB – Installation with plastic nailable disc or nailable plates
Specifically for solitary assembly and in locations where access is difficult

Installation with trapezoidal strip



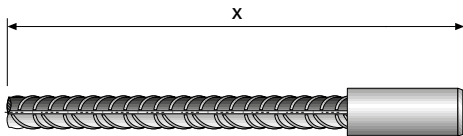
GripTec GTB – Installation with trapezoidal strip
Especially suitable for series erection

BETOMAX® rebar coupler system GripTec GTB for static and dynamic load

- Approved by German building authority No. Z-1.5-133
- Bar 500 B reinforcement steel / 12-28 mm Ø to DIN 488, 32 and 40 mm Ø with general building authority approval
- Reinforcing steel B 500 C for seismic areas on request
- Metric ISO thread (except Ø28 M30 x 2.5)
- Diameters of all accessories colour-coded for simple identification
- Plastic caps protect all couplings and threads
- All variants can be exposed to full tensile and/or compressive stress
- Range of stress Ø 12-28 $2\sigma_A = 95 \text{ N/mm}^2$ to EC2
- Range of stress Ø 32-40 $2\sigma_A = 80 \text{ N/mm}^2$ to EC2
- Envisaged bending: 2 x ds behind socket
- Swaged coupling
- Fast delivery of standard lengths ex works
- Bar lengths up to 14 m available, longer bars on request
- Each bar is tested with 150% of the working load
- Apply required tightening torque with torque wrench
- Series erection in conjunction with trapezoidal strip
- **GripTec GTB-A + GTB-M standard coupling** for straight and bent, free-rotating rebars
- **GripTec GTB-FTA standard coupling** the cost-effective solution for standard connections up to Ø 28 mm
- **GripTec GTB-R transition coupling** for straight and bent, free-rotating rebars of different diameter
- **GripTec GTB-P I / P I repair positioning coupling** for straight and bent, not free-rotating and longitudinally fixed rebars (PI)
- **GripTec GTB-P II positioning coupling** for straight and bent, not free-rotating and/or longitudinally fixed rebars (PII)
- **GripTec GTB-EV end anchor** to dissipate force exerted by bar in concrete by way of an anchor plate
- **GripTec GTB-AN weldable socket** for connection to structural steelwork with Bar 500 B steel
- **GripTec GTB-EK Stainless steel connector** for use in areas at risk of corrosion
- **GripTec GTB-STB Steel connector** for connecting with metric screws

GripTec GTB-M – Female

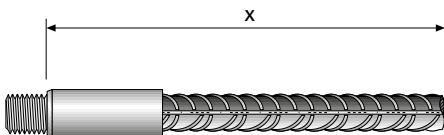
Socket bar for GripTec GTB reinforcement system. Standard lengths available immediately ex works.



Item No.	Rebar Ø mm	Length x m	Packing unit piece	Weight kg/piece
32121050	12	0.50	1	0.533
32121060	12	0.60	1	0.622
32121085	12	0.85	1	0.844
32121115	12	1.15	1	1.110
32141070	14	0.70	1	0.943
32141095	14	0.95	1	1.244
32141135	14	1.35	1	1.728
32161110	16	1.10	1	1.852
32161155	16	1.55	1	2.562
32161220	16	2.20	1	3.587
32201135	20	1.35	1	3.495
32201190	20	1.90	1	4.857
32201275	20	2.75	1	6.948
32251170	25	1.70	1	6.865
32251245	25	2.45	1	9.755
32281190	28	1.90	1	9.595
32281270	28	2.70	1	13.462
32321215	32	2.15	1	14.142
32321310	32	3.10	1	20.149
32401290	40	2.90	1	29.884

GripTec GTB-A – Male

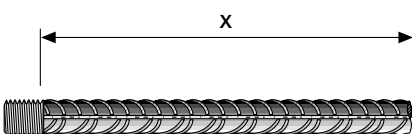
Connecting bar for GripTec GTB reinforcement system. Standard lengths available immediately ex works.



Item No.	Rebar Ø mm	Length x m	Packing unit piece	Weight kg/piece
32122050	12	0.50	1	0.558
32122060	12	0.60	1	0.647
32122085	12	0.85	1	0.869
32122115	12	1.15	1	1.135
32142070	14	0.70	1	0.983
32142095	14	0.95	1	1.284
32142135	14	1.35	1	1.768
32162110	16	1.10	1	1.885
32162155	16	1.55	1	2.595
32162220	16	2.20	1	3.620
32202135	20	1.35	1	3.600
32202190	20	1.90	1	4.962
32202275	20	2.75	1	7.053
32252170	25	1.70	1	7.030
32252245	25	2.45	1	9.920
32282190	28	1.90	1	9.815
32282270	28	2.70	1	13.682
32322215	32	2.15	1	14.474
32322310	32	3.10	1	20.481
32402290	40	2.90	1	30.504

GripTec GTB-FTA – Male

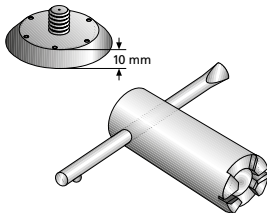
The cost-effective solution for standard connections up to Ø 28 mm. Standard length immediately available ex works.



Item No.	Rebar Ø mm	Length x m	Packing unit piece	Weight kg/piece
39122050	12	0.50	1	0.460
39122060	12	0.60	1	0.550
39122085	12	0.85	1	0.770
39122115	12	1.15	1	1.040
39142095	14	0.95	1	1.170
39142135	14	1.35	1	1.637
39162110	16	1.10	1	1.770
39162155	16	1.55	1	2.480
39202135	20	1.35	1	3.380
39202190	20	1.90	1	4.730
39252170	25	1.70	1	6.560
39252245	25	2.45	1	9.450
39282190	28	1.90	1	9.285
39282270	28	2.70	1	13.152

Plastic nailable disc

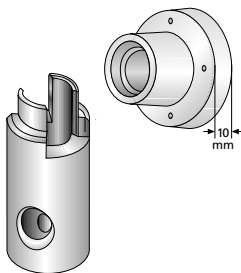
For fixing GripTec GTB reinforcement connectors (M) to the formwork.



Item No.	Rebar Ø mm	Designation	Packing unit pieces	Weight kg/piece
32128000	12	GTB Plastic nailable disc	100	0.008
32148000	14	GTB Plastic nailable disc	100	0.008
32168000	16	GTB Plastic nailable disc	100	0.010
32208000	20	GTB Plastic nailable disc	100	0.010
32258000	25	GTB Plastic nailable disc	250	0.010
32288000	28	GTB Plastic nailable disc	250	0.012
32328000	32	GTB Plastic nailable disc	250	0.012
92001032		Socket with tommy bar for nailable plate	1	0.340

Nailable plate

For fixing GripTec GTB connecting bars (A) to the formwork.



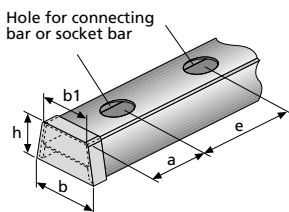
Item No.	Rebar Ø mm	Designation	Packing unit pieces	Weight kg/piece
32128020	12	GTB Nailable plate	50	0.012
32148020	14	GTB Nailable plate	50	0.014
32168020	16	GTB Nailable plate	50	0.017
32208020	20	GTB Nailable plate	50	0.023

Use of the special spanner is essential here.
Attachment for 1/2" ratchet spanner, or turn with steel bar.

92001212		Special spanner D12 for nailable plate D12	1	0.280
92001214		Special spanner D14 for nailable plate D14	1	0.300
92001216		Special spanner D16 for nailable plate D16	1	0.320
92001220		Special spanner D20 for nailable plate D20	1	0.320

Trapezoidal strip GTB

Punched to order depending on steel diameter (standard length 1 meter).



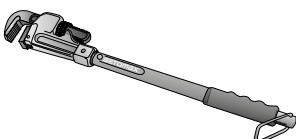
Item No.	Rebar Ø mm	Designation	Packing unit	Weight kg/unit
32600060	12 - 20	GTB-60 trapezoidal strip	meter	0.520/m
32600090	25 - 32	GTB-90 trapezoidal strip	meter	1.120/m
32600061		End cap GTB-60	piece	0.750/100 pc.
32600091		End cap GTB-90	piece	1.300/100 pc.

a= end spacing GripTec GTB-60: h= 3.5 cm, b= 6.0 cm, b1= 4.8 cm
e= bar spacing GripTec GTB-90: h= 5.0 cm, b= 9.0 cm, b1= 7.0 cm

Please state end spacing (a) and bar spacing (e) when ordering.

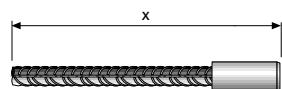
GripTec GTB – torque wrench

Torque wrench for GripTec GTB screw connectors, self-locking, convenient to use with one hand.

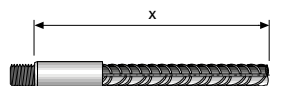


Item No.	Rebar Ø mm	Designation	Packing unit piece	Weight kg/piece
92001227	12-28	GripTec GTB torque wrench size 1, 20 - 150 Nm	1	2.090
92003240	32-40	GripTec GTB torque wrench size 2, 100 - 550 Nm	1	5.800

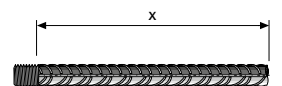
GripTec GTB – Wide variety of coupler applications



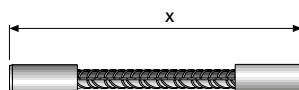
GripTec GTB-M Female



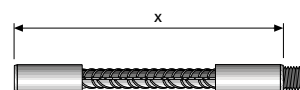
GripTec GTB-A Male



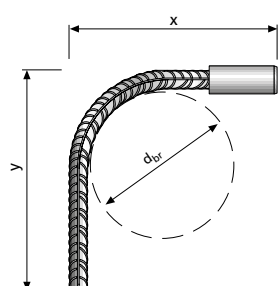
GripTec GTB-FTA Male



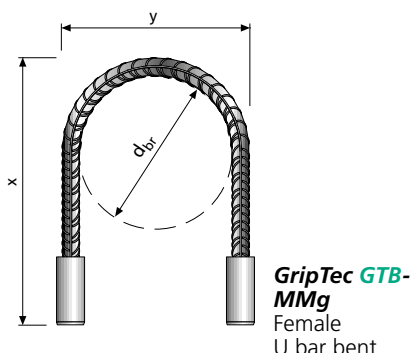
GripTec GTB-MM
Female/ Female



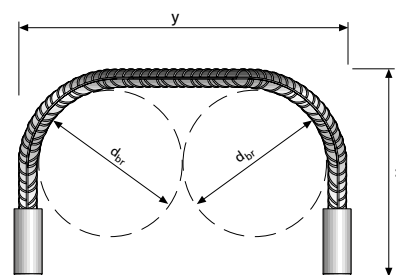
GripTec GTB-MA
Female/Male



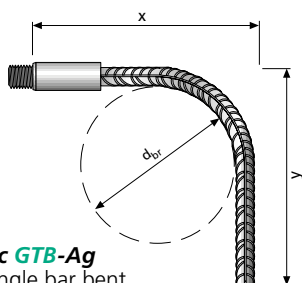
GripTec GTB-Mg
Female single bar bent



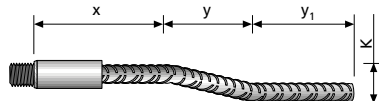
GripTec GTB-MMg
Female
U bar bent



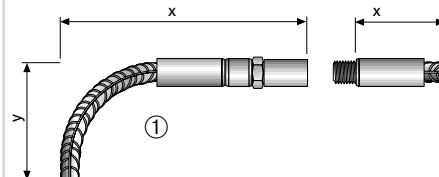
GripTec GTB-MMgg
Female U bar bent



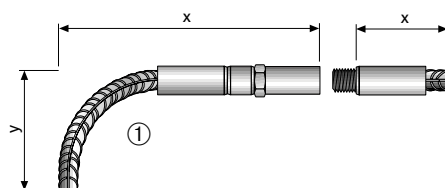
GripTec GTB-Ag
Male single bar bent



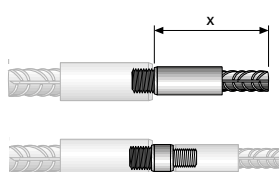
GripTec GTB-Agek
Male cranked bar bent



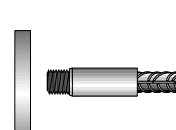
GripTec GTB-PI
Positional coupler I



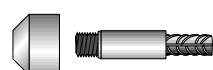
GripTec GTB-PII
Positional coupler II



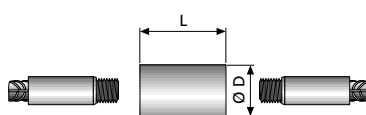
GripTec GTB-R
Linking bar/bolt



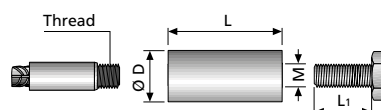
GripTec GTB-EV
End anchor



GripTec GTB-AN
Weldable coupler



GripTec GTB-EK
Stainless steel connector



GripTec GTB-STB
Steel connector

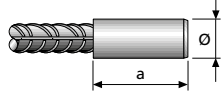
x = Length of connecting bar,
socket bar (incl. screw plug)
or bent leg with socket
without thread

y = Exposed leg length
K = Cranked dimension
d_{br} = Bending roll diameter

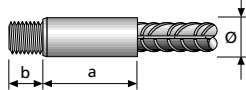
① = Plus connecting thread with PI and PII;
see **GTB leaflet** for system dimensions

Standard couplers

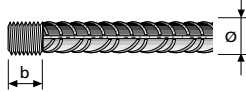
GTB-M



GTB-A



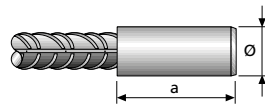
GTB-FTA



Rebar Ø mm	a mm	b mm	Thread	Ø mm
12	70	12.0	M14 x 2.0	19.0
14	85	14.0	M16 x 2.0	21.6
16	100	16.0	M18 x 2.5	25.3
20	115	20.0	M22 x 2.5	31.0
25	120	22.0	M27 x 3.0	38.0
28	105	25.0	M30 x 2.5*	42.0
32	140	28.0	M33 x 3.5	47.0
40	170	34.0	M42 x 4.5	61.0

Minimum distance according EC 2 1ds / min. 2 cm
* Thread pitch does not correspond to standard pitch.

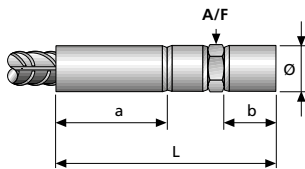
Linking coupler



Item No.	Rebar Ø mm	a mm	Thread	Ø mm	Packing/ unit piece	Weight kg/piece
32141250	14/12	70.0	M14 x 2.0	22.0	1	0.120
32161450	16/14	85.0	M18 x 2.5	24.5	1	0.140
32201650	20/16	100.0	M22 x 2.5	30.5	1	0.240
32252050	25/20	115.0	M27 x 3.0	38.0	1	0.440
32322850	32/28	105.0	M33 x 3.5	47.0	1	0.840
32403250	40/32	140.0	M42 x 4.5	59.0	1	1.860

Minimum distance according EC 2 1ds / min. 2 cm

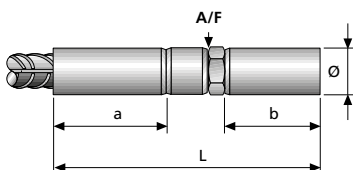
Positional coupler I



Item No.	Rebar Ø mm	a mm	b mm	L mm	Thread	Ø mm	A/F mm	Packing/ unit piece	Weight kg/piece
32121430	12	70.0	26.0	121.2	M14 x 2.0	20.0	22	1	0.200
32141630	14	85.0	30.0	143.8	M16 x 2.0	24.0	24	1	0.240
32161830	16	100.0	34.0	165.4	M18 x 2.5	26.0	27	1	0.300
32202230	20	115.0	42.0	195.6	M22 x 2.5	34.0	32	1	0.620
32252730	25	120.0	46.5	213.6	M27 x 3.0	40.0	41	1	1.000
32283030	28	105.0	52.0	199.0	M30 x 2.5*	45.0	46	1	1.480
32323330	32	140.0	58.5	245.5	M33 x 3.5	50.0	50	1	2.060

Minimum distance according EC 2 1ds / min. 2 cm
* Thread pitch does not correspond to standard pitch.

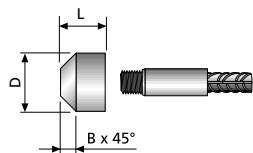
Positional coupler II



Item No.	Rebar Ø mm	a mm	b mm	L mm	ΔL mm	Thread	Ø mm	A/F mm	Packing/ unit piece	Weight kg/piece
32121440	12	70.0	59.0	153.0	35.0	M14 x 2.0	20.0	22	1	0.320
32141640	14	85.0	61.0	172.0	33.0	M16 x 2.0	24.0	24	1	0.360
32161840	16	100.0	68.0	197.0	36.0	M18 x 2.5	26.0	27	1	0.620
32202240	20	115.0	77.0	225.0	37.0	M22 x 2.5	34.0	32	1	1.090
32252740	25	120.0	89.0	249.0	45.0	M27 x 3.0	40.0	41	1	1.840
32283040	28	105.0	97.0	241.0	47.0	M30 x 2.5*	45.0	46	1	2.520
32323340	32	140.0	101.0	287.5	45.0	M33 x 3.5	50.0	50	1	3.390
32404240	40	170.0	117.0	289.0	49.0	M42 x 4.5	65.0	65	1	6.740

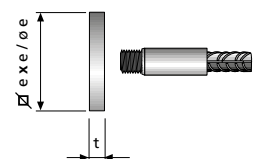
Minimum distance according EC 2 1ds / min. 2 cm
* Thread pitch does not correspond to standard pitch.

GripTec GTB-AN- weldable socket



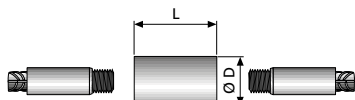
Item No.	Steel Ø mm	Thread	Ø D mm	B mm	L mm	Packing/ unit piece	Weight kg/piece
32121450	12	M 14 x 2.0	22	4	22	1	0.060
32141650	14	M 16 x 2.0	26	5	24	1	0.060
32161850	16	M 18 x 2.5	29	6	26	1	0.100
32202250	20	M 22 x 2.5	36	7	28	1	0.160
32252750	25	M 27 x 3.0	45	9	35	1	0.260
32283050	28	M 30 x 2.5	50	10	40	1	0.460
32323350	32	M 33 x 3.5	56	12	45	1	0.580
32404250	40	M 42 x 4.5	75	14	50	1	1.080

GripTec GTB-EV- end anchor



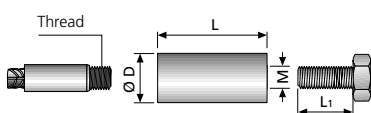
Item No.	Steel Ø mm	Thread	Dimension D x e x e Ø e mm	Thickness mm t	Packing/ unit piece	Weight kg/piece
32121415	12	M 14 x 2.0	45	12	1	0.220
32141615	14	M 16 x 2.0	50	14	1	0.260
32161815	16	M 18 x 2.5	55	16	1	0.340
32202215	20	M 22 x 2.5	65	20	1	0.700
32252715	25	M 27 x 3.0	80	22	1	1.000
32283015	28	M 30 x 2.5	90	25	1	1.460
32323315	32	M 33 x 3.5	105	28	1	2.280
32404215	40	M 42 x 4.5	125	34	1	4.280

GripTec GTB-EK- stainless steel connector



Item No.	Steel Ø mm	Thread	Ø D mm	L mm	Packing/ unit piece	Weight kg/piece
32121418	12	M 14 x 2.0	23	45	1	0.140
32141618	14	M 16 x 2.0	27	50	1	0.220
32161818	16	M 18 x 2.5	30	55	1	0.260
32202218	20	M 22 x 2.5	38	60	1	0.400
32252718	25	M 27 x 3.0	47	65	1	0.760
32283018	28	M 30 x 2.5	53	75	1	1.100
on request	32	M 33 x 3.5	59	85	1	1.440
on request	40	M 42 x 4.5	74	95	1	2.370

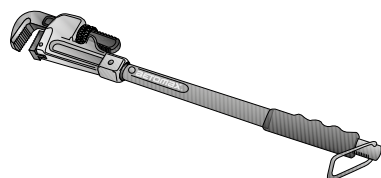
GripTec GTB-STB- steel connector



Item No.	Steel Ø mm	Thread	Ø D mm	Thread M	L ₁ mm	L mm	Packing/ unit piece	Weight kg/piece
32121629	12	M 14 x 2.0	25	M 16 x 2.0	35	49	1	0.160
32141829	14	M 16 x 2.0	28	M 18 x 2.5	40	56	1	0.160
32162029	16	M 18 x 2.5	30	M 20 x 2.5	45	63	1	0.233
32202429	20	M 22 x 2.5	36	M 24 x 3.0	50	72	1	0.460
32253029	25	M 27 x 3.0	44	M 30 x 3.5	60	84	1	0.800
32283329	28	M 30 x 2.5	49	M 33 x 3.5	70	97	1	1.380
on request	32	M 33 x 3.5	55	M 36 x 4.0	80	110	1	on request
on request	40	M 42 x 4.5	67	M 48 x 5.0	90	126	1	on request

The hex nut has to be provided by the customer at site.

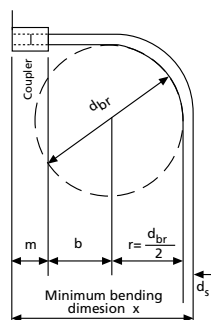
GripTec GTB- torque wrench



Steel Ø	Torque Nm	Torque wrench Size
12	20	1
14	30	1
16	40	1
20	60	1
25	100	1
28	140	1
32	250	2
40	500	2

GripTec GTB- Minimum bending dimensions

The GripTec GTB rebar coupler system can be bent before delivery if required. The minimum dimension x of the bent leg (for GTB-A or GTB-M) depends on the bending roll diameter as defined in EC 2.



Steel Ø d _s	Socket Length a mm	min b ≥ 2 d _s cm	Min. bending dim. 4 d _s bzw. 7 d _s cm	10 d _s cm	min x at d _{br} = *) 15 d _s cm	20 d _s cm
12	70	2,4	14,5	17,5	21,0	24,0
14	85	2,8	15,5	19,6	23,6	26,6
16	100	3,2	18,0	23,0	27,0	31,0
20	115	4,0	24,5	27,5	32,5	37,5
25	120	5,0	28,3	31,8	38,3	44,3
28	105	5,6	28,9	32,9	39,9	46,9
32	140	6,4	36,0	40,0	48,0	56,0
40	170	8,0	43,0	49,0	59,0	69,0

*) Bending roll diameter d_{br} according to EC 2. Values comply with approval specification. Working dimensions according to bending trials.

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Construction joint technology

Shuttering system technology

Building materials technology

Spacer technology

Work aids

When it matters...

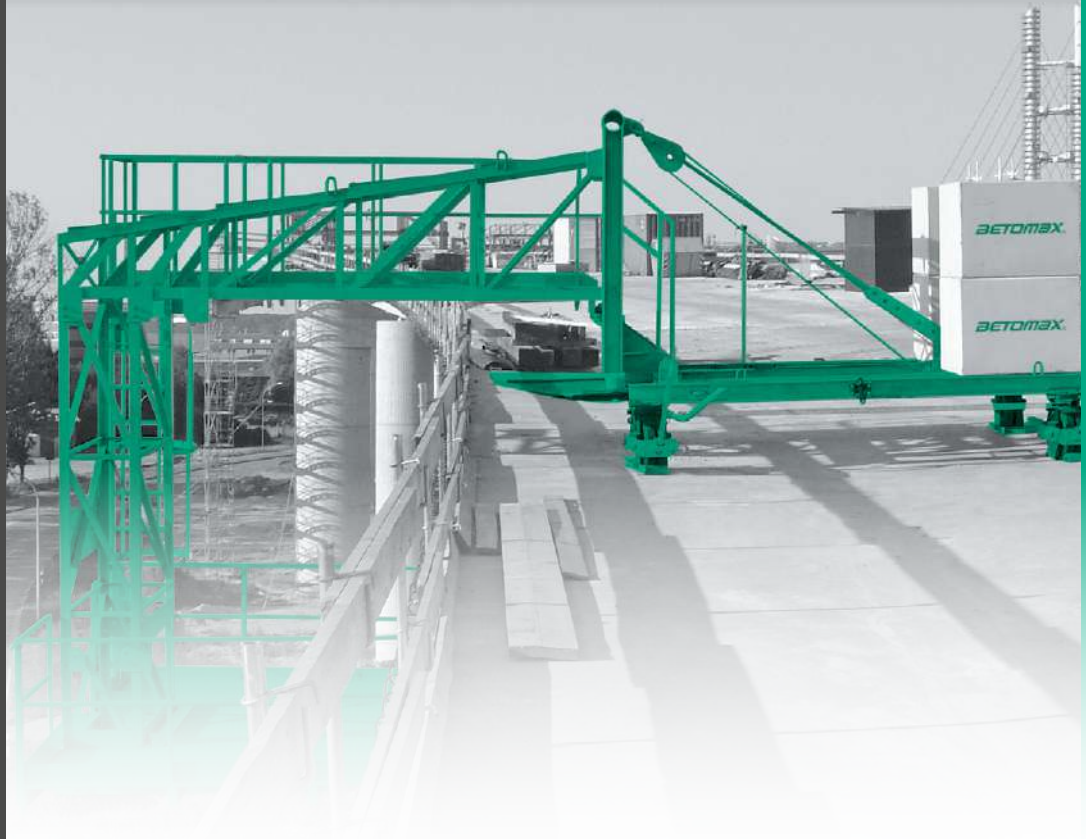


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Subject to technical change. 03 / 2019





Superstructure shuttering systems

Superstructure shuttering systems accessories

Anchors

Superstructure shuttering systems

Mounting / inspection trolleys

Sheet piling systems

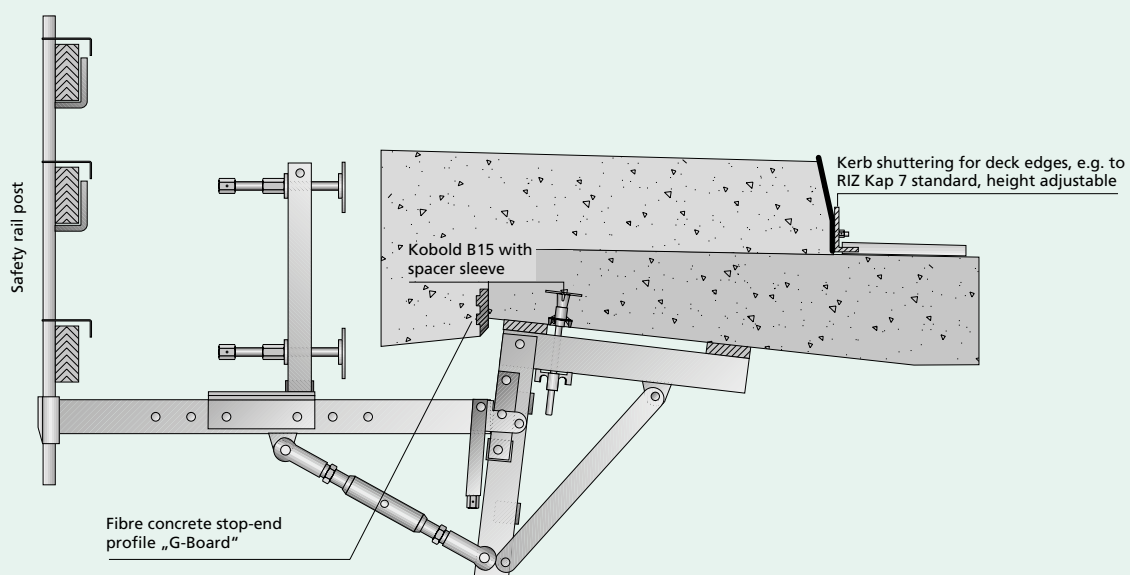
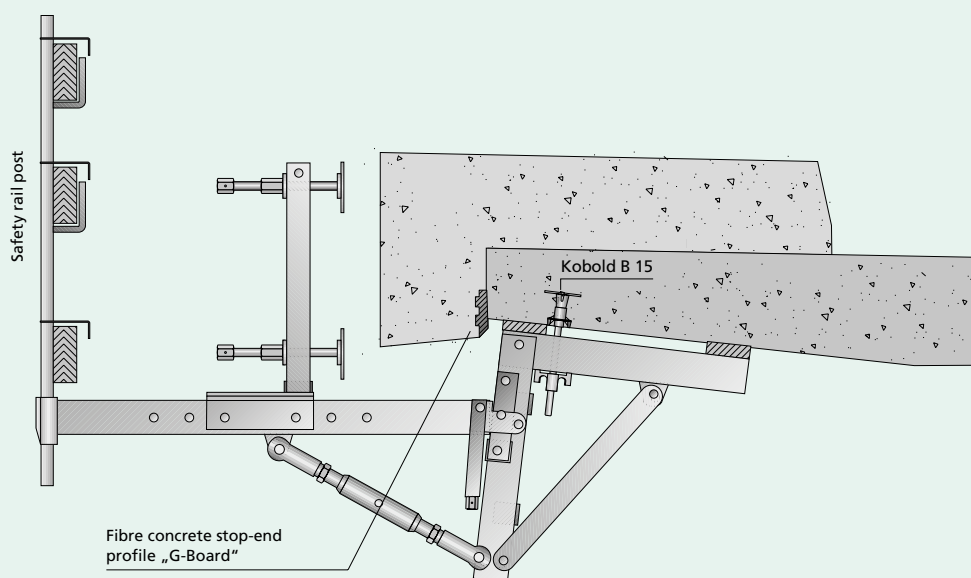
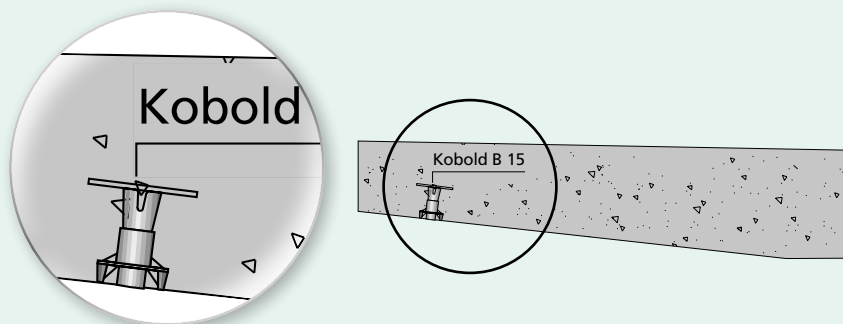
Safety barriers



When it matters...

BETOMAX[®]
systems
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Overview deck edge fixtures and Superstructure shuttering systems



Bridge edge beam bracket GK-2000 – Applications, properties

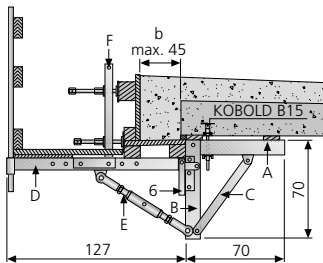
Use of bridge edge beam bracket GK-2000 as top structure console

Variable bridge edge beam bracket for use as:

- Aid for erecting deck edge formwork in civil engineering, e.g. bridges and retaining walls
- Working and protective scaffolding for renovation work on superstructures in civil engineering, as well as on reinforced concrete deck edges and walls in general civil engineering construction
- Overvoltage protection to German railway (DB) standards 997.02 (alternative for hidden pantograph-stop rail) on request.
- All variants available with height adjustment (as standard with GK-2000/1.27) and additional gangway insert
- Other configurations available on request
- Side guard for GK-2000

Bridge edge beam bracket GK-2000 / 1.27

Standard application for regular ledges according to standard drawings issued by the German Federal Ministry of Transport, Construction and Housing



Item No.	Designation	Packing unit piece	Weight kg/piece
44102000	GK-2000/1.27	1	74.700

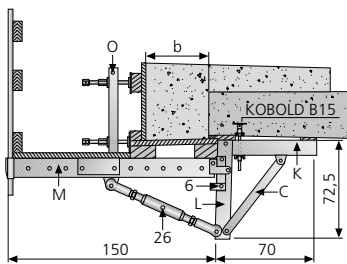
Also available as rental item on request.

A = Fastening rail 70
B = Joint piece 70
C = Strut 65
D = Shuttering rail 1.27

6 = Height adjuster
E = Spindle M 24
F = Shuttering support 65/55

Bridge edge beam bracket GK-2000 / 1.50

For wide decks in bridge construction.



Item No.	Designation	Packing unit piece	Weight kg/piece
44102150	GK-2000/1.50	1	86.700

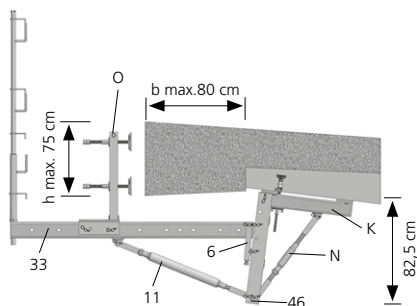
Also available as rental item on request.

K = Fastening rail 70
L = Joint piece 72.5
C = Strut 65
M = Shuttering rail 1.50

6 = Height adjuster
26 = Spindle M 30 1.50
O = Shuttering support 65/65

Bridge edge beam bracket GK-2000 / 1.80

For wide projecting decks.



Item No.	Designation	Packing unit piece	Weight kg/piece
44102180	GK-2000/1.80	1	103.300

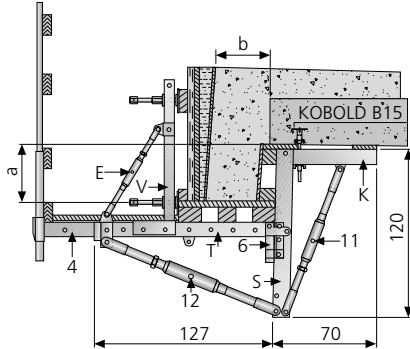
Also available as rental item on request.

K = Fastening rail 70
46 = Joint piece 82.5
N = Spindle M 30
33 = Shuttering rail 1.80

11 = Spindle M 30 S
O = Shuttering support 65/65
6 = Height adjuster

Bridge edge beam bracket GK-2000 / 1.27 – 1.20

For overhanging, suspended decks.



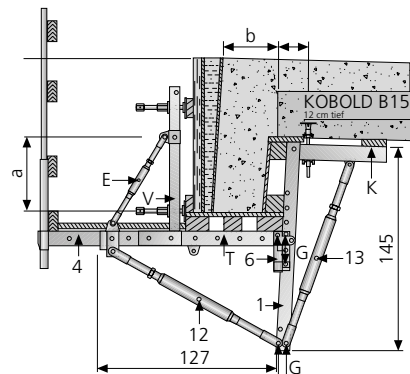
Item No.	Designation	Packing unit piece	Weight kg/piece
44102120	GK-2000/ 1.27 - 1.20 (overhanging)	1	134.050

Also available as rental item on request.

K = Fastening rail 70
S = Joint piece 1.20
T = Shuttering rail 1.27
E = Spindle M 24
6 = Height adjuster
11 = Spindle M 30
12 = Spindle M 30 S
V = Shuttering support 1.0
4 = Gangway

Bridge edge beam bracket GK-2000 / 1.27 – 1.45

For overhanging, suspended decks
with non-standard dimensions.



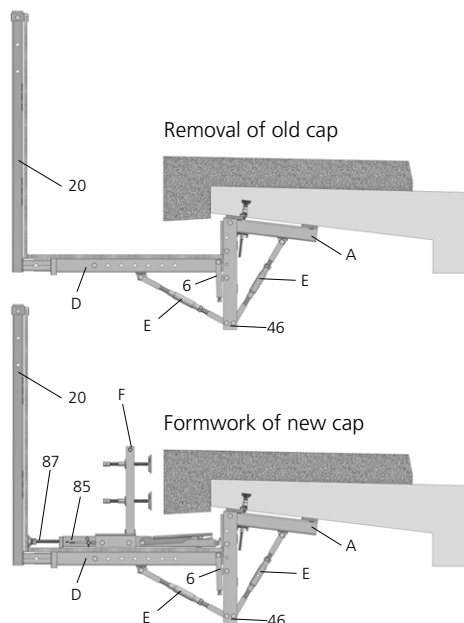
Item No.	Designation	Packing unit piece	Weight kg/piece
44102145	GK-2000/ 1.27 - 1.45	1	145.250

Also available as rental item on request.

K = Fastening rail 70
1 = Joint piece 1.45
T = Shuttering rail 1.27
E = Spindle M24
6 = Height adjuster
12-13 = Spindle M 30 S, M 36
V = Shuttering support 1.00
H = Safety rail post (exclusive)
4 = Gangway
W = Bolt
G1 = Spring connector

Bridge edge beam bracket GK-2000 / 1.27 – restoration

New ledge console for restoration with restoration wheel.



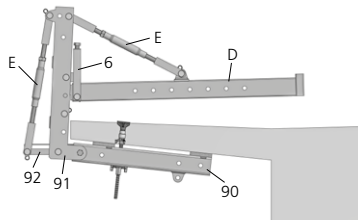
Item No.	Designation	Packing unit piece	Weight kg/piece
44102200	GK-2000/1.27 restoration	1	121.200

For rent only.

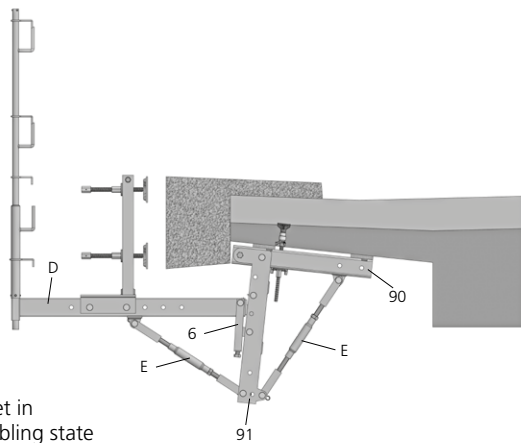
A = Fastening rail 70
46 = Joint piece 82,5
6 = Height adjuster
D = Shuttering rail 1.27
F = Shuttering support
E = Spindle 640-810 M24
20 = Side guard 1.80
85 = Restoration rail
87 = Spindle B23 x 260

Bridge edge beam bracket GK-2000 / 1.27 for precast elements

Console is clapped on the precast element during transport. The console is ready for use when it is turned up after the precast element is set.



Bracket in delivery state



Bracket in assembling state

Item No.	Designation	Packing unit piece	Weight kg/piece
44102210	GK-2000/1.27 for precast elements	1	89.800

Also available as rental item on request.

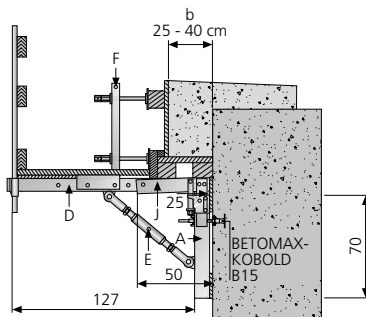
D = Shuttering rail 1.27
E = Spindle M24
F = Shuttering support 65/55
6 = Height adjuster
90 = Fastening rail 76

91 = Joint piece 83,5
92 = Transport lock
W = Bolt
G1 = Spring connector

Use of Bridge edge beam bracket GK-2000 as wing console

Bridge edge beam bracket GK-2000 / 50

For narrow decks on ramps or wing walls and retaining walls.



Item No.	Designation	Packing unit piece	Weight kg/piece
44102050	GK-2000/50 with height adjuster	1	65.050

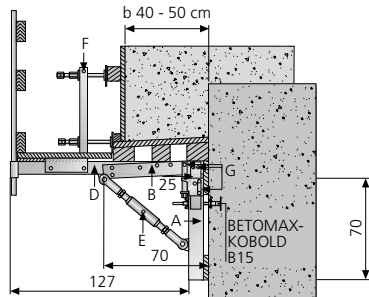
Also available as rental item on request.

A = Fastening rail 70
J = Joint piece 50
D = Shuttering rail 1.27

E = Spindle M 24
F = Shuttering support 65/55
25 = Wing height adjuster (on request)

Bridge edge beam bracket GK-2000 / 70

Can also be used for ramps or wing walls and retaining walls.



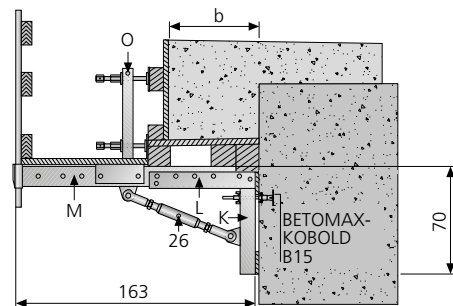
Item No.	Designation	Packing unit piece	Weight kg/piece
44102070	GK-2000/70 with height adjuster	1	61.000 71.450

Also available as rental item on request.

A = Fastening rail 70
B = Joint piece 70
D = Shuttering rail 1.27
E = Spindle M 24
25 = Wing height adjuster (on request)
F = Shuttering support 65/55
H = Safety rail post (exclusive)

Bridge edge beam bracket GK-2000 / 72.5

For large ledges on ramps or wing walls and retaining walls.



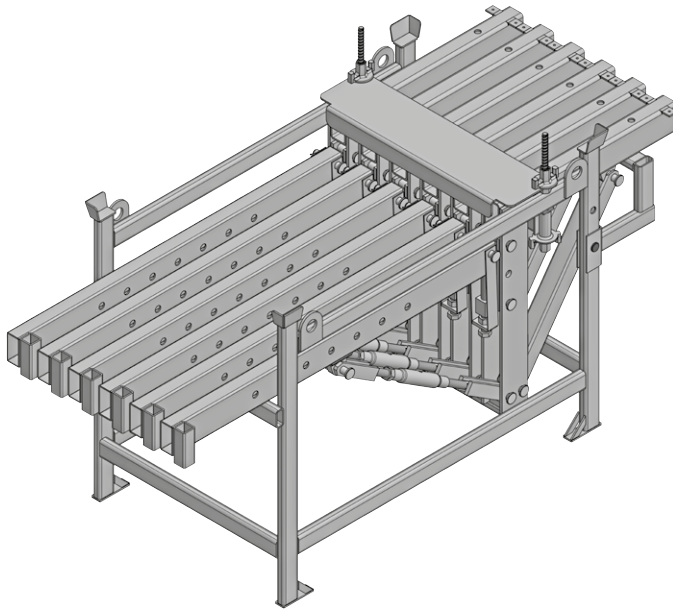
Item No.	Designation	Packing unit piece	Weight kg/piece
44102080	GK-2000/72.5	1	73.000

Also available as rental item on request.

K = Fastening rail 70
L = Joint piece 72,5
M = Shuttering rail 1.50
26 = Spindle M 30
O = Shuttering support 65 / 65
H = Safety rail post (exclusive)

Transport stanchion

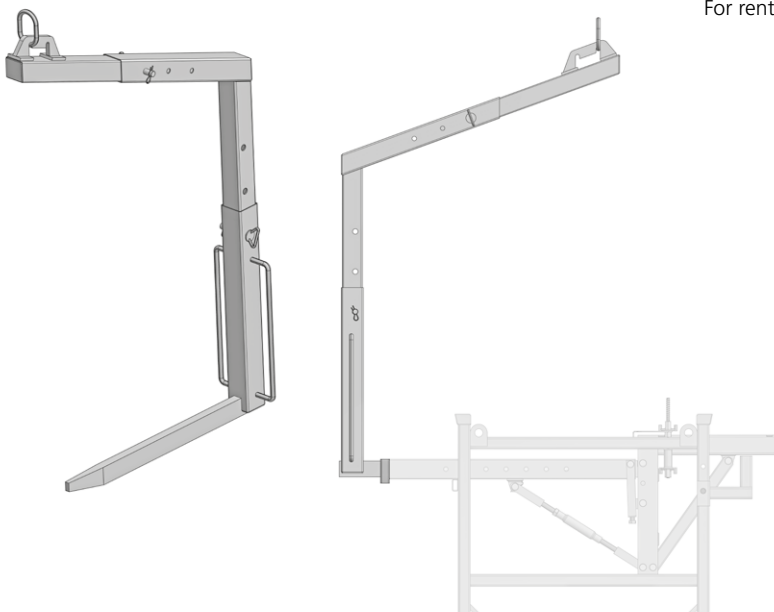
For transport of six pre-installed *Bridge edge beam brackets GK-2000/1.27*.



Item No.	Designation	Packing unit piece	Weight kg/piece
44102006	Transport stanchion	1	76.000
Rental only on deposit.			

Lifting plug

Lifting plug is a tool for installation of pre-assembled *Bridge edge beam brackets GK-2000*.

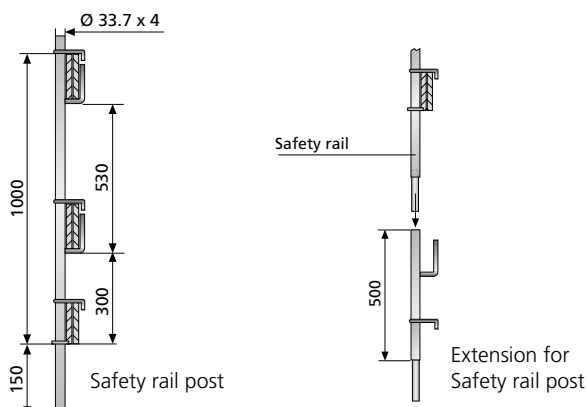


Item No.	Designation	Packing unit piece	Weight kg/piece
44102008	Lifting plug	1	89.000
For rent only.			

Accessories for Bridge edge beam bracket GK-2000

Safety rail post

Complies with the safety rules for lateral protection and roof safety barriers as a means of safeguarding against falling (BG-I 807 of October 2002). According to DIN EN 12811.



Item No.	Designation	Packing unit piece	Weight kg/piece
35213250	Safety rail post, galvanized	1	4.600
35350000	Extension for safety rail post	1	5.760

Also available as rental item on request.

Safety rail post for erecting a temporary side safety system

- For BETOMAX® GK-2000 Bridge edge beam brackets
- For sheet piling
- For shuttering supports and timber
- For deck edges and bridge superstructures
- For flights of stairs
- In conjunction with BETOMAX® railing and crash barrier anchors on bridges

Decking board

Decking boards are chipped into safety railposts for safety barrier.

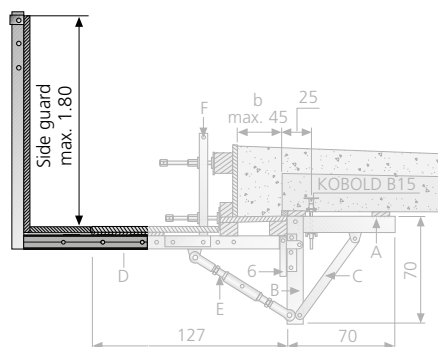


Item No.	Designation	Packing unit piece	Weight kg/piece
35350180	Decking board 180 cm	1	3.400
35350250	Decking board 250 cm	1	4.800

For rent only.

Side guard 1.80

Accessory for the GK-2000 system, alternative to the BX guardrail as fully planked safety rail from structures above and under rail and road structures, e.g. electric railwaytracks and motorways.



Item No.	Designation	Packing unit piece	Weight kg/piece
35351800	Side guard 1.80 for bridge edge beam bracket GK-2000	1	21.540

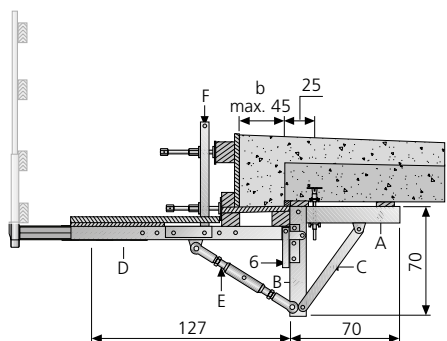
Also available as rental item on request.

- Compatible with all GK-2000 types
- Insert for bolting
- Vertical level up to 1.80 meters with possible full-surface planking, either with nailing straps and/or clamping retainers
- May be supplemented with BX earthing accessories

Accessories for Bridge edge beam bracket GK-2000

Gangway 4+R

Extension of the shuttering rail to get a wider work area.



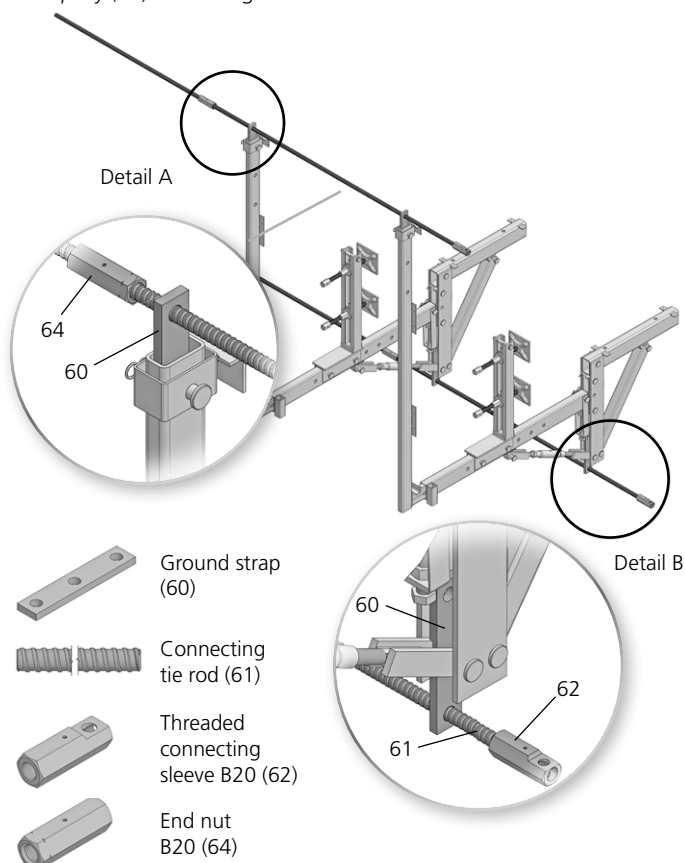
Item No.	Designation	Packing unit piece	Weight kg/piece
44362560	Gangway 0.75 (4) for Shuttering rail (D), (5) and (T)	1	5.140
44362513	Gangway 1.00 (R) for Shuttering rail (M)	1	9.100

Also available as rental item on request.

Grounding system

For grounding of cap framework over electrified areas.
Permission by German Railway Company (DB) exists.

Components of grounding system German Railway
Company (DB) with side guard 1.80



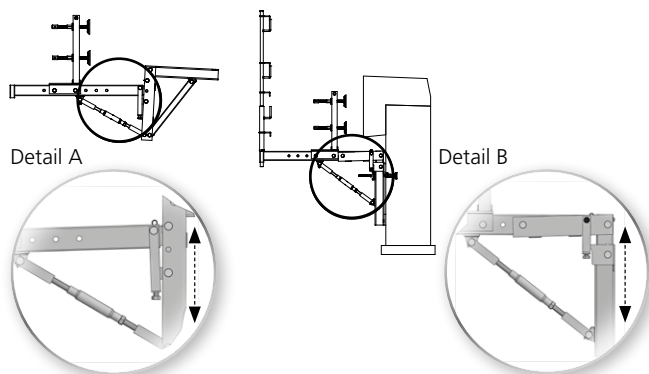
Item No.	Designation	Packing unit piece	Weight kg/piece
44362590	Ground strap (60)	1	1.400
44362591	Connecting tie rod (61) BETOMAX 20 (2.00 m)	1	5.200
44362594	Threaded connecting sleeve B20 (62)	1	0.650
44362592	End nut B20 (64)	1	0.520

Also available as rental item on request.

Accessories for Bridge edge beam bracket GK-2000

Height adjuster

For height and incline adjusting of shuttering rails.
Components of grounding system DB with *Side guard 1.80*

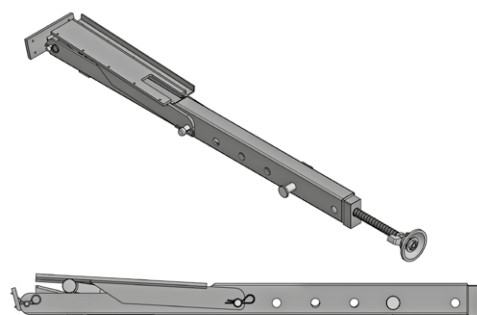


Item No.	Designation	Packing unit piece	Weight kg/piece
44362546	Height adjuster 6 for top structure console (3xW/G1)	1	8.200
44362580	Height adjuster 25 for wing console (2xW, 1x28, 3xG1)	1	10.700

Also available as rental item on request.

Restoration rail

Is put on the closed base of the cap framework and clamped between joint piece und side guard.
Suitable for *Shuttering rail 1.27* and *Shuttering rail 1.50*



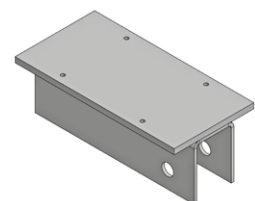
Item No.	Designation	Packing unit piece	Weight kg/piece
45362610	Restoration rail	1	17.900

For rent only.

- Restoration rail with clamping unit 240, 350 and 500 mm available.

Bracket support (Q) for anchorage to the ground and longitudinal bracing

Placed on the shuttering rail and bolted.
Used to fasten the scaffold planks.



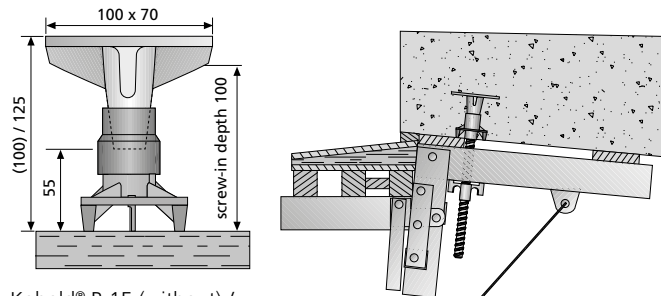
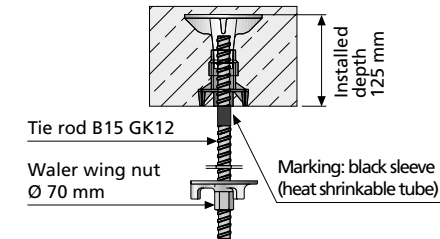
Item No.	Designation	Packing unit piece	Weight kg/piece
44362510	Bracket support (Q) for anchorage to the ground and longitudinal bracing	1	7.700

Also available as rental item on request.

Kobold® B 15-12

*Approved by German building authority No. Z-21.6-1764

Retaining element with BETOMAX® B15 threaded rod, for mounting Bridge edge beam brackets GK-2000.



Kobold® B 15 (without) / with spacer sleeve

Item No.	Designation	Packing unit	Weight kg/piece
34041120	Kobold® B 15-12 set with spacer sleeve, nailable base, B15 GK12 rod and waler wing nut Ø 70	10 pieces	1.583/pc.
39035000	Stainless steel nails 35 mm	200 pcs./bag	0.780/1000 pcs.

For sealing the Kobold®:

66320312	Stopf 20, Tele grey 1 (dark)	100 pcs./bag	2.370/1000 pcs.
66320314	Stopf 20, Tele grey 4 (light)	100 pcs./bag	2.370/1000 pcs.

All parts available individually:

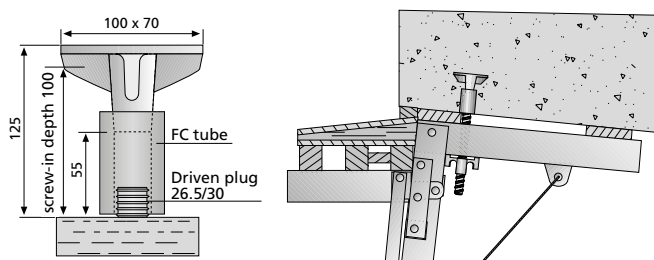
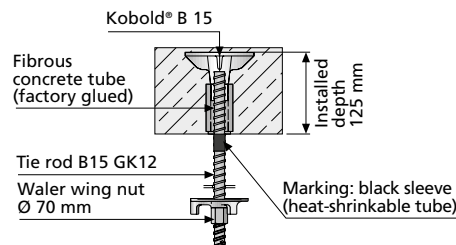
34041000	Kobold® B15	25	0.530
34041100	Kobold® B15 with spacer sleeve, nailable base,	25	0.532
34006000	Spacer sleeve	50	0.007
34004000	Nailable base	50	0.020
34041140	Tie rod with marking	1	0.620
20480700	Waler wing nut Ø 70	50	0.406
34041122	Hot glue gun	1	0.180
34041124	Compensation glue stick	50	0.015

*Valid for total package only

Kobold® B 15 FB-12

*Approved by German building authority No. Z-21.6-1764

Retaining element with BETOMAX® B15 threaded rod, for mounting Bridge edge beam brackets GK-2000.



Item No.	Designation	Packing unit	Weight kg/piece
34046120	Kobold® B 15 FB-12 set with FB spacer tube, driven plug (new), B15 GK12 rod and waler wing nut Ø 70	10	1.698

For sealing the Kobold®:

34046068	Fibre concrete plug 26/20	50	0.020
86430053	Betofix glue 600 ml tube with nozzle (lasts for approx. 90 FC plugs)	1	0.920

All parts available individually:

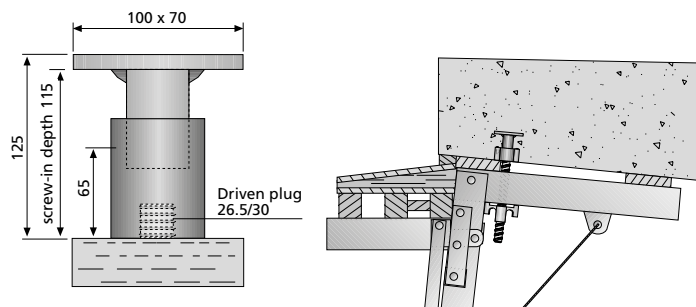
34046055	Kobold B15 FB	20	0.672
34041140	Tie rod with marking	1	0.620
20480700	Waler wing nut Ø 70	50	0.406

*Valid for total package only

Kobold® VA M 16-FB

Approved by German building authority No. Z-21.6-1764

Retaining element with metric thread; seal with *Stopf 26 plug*.



Item No.	Designation	Packing unit	Weight kg/Stck.
34046140	Kobold® VA M 16-FB	20 pc./bag	1.200/pc.
34046066	Driven plug, new 26.5/30	50 piece	0.015/pc.
34046145	Bar B 15/M 16 length 350 x 50 mm	1 piece	0.500/pc.

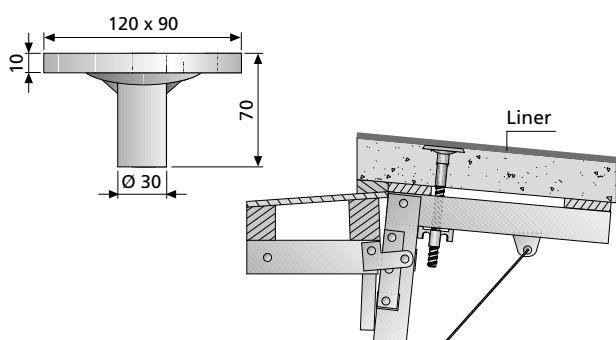
For sealing the Kobold®:

66326110	Stopf 26	100 piece	0.005/pc.
66026080	Flupp 26	500 piece	0.014/pc.

Installed depth H = 125 mm
Concrete quality C 20 / 25

Fitsch with base plate

For attaching *Bridge edge beam brackets* to components without concreted-in anchoring parts, e.g. when renovating existing structures.



Item No.	Designation	Packing unit pieces/bundle	Weight kg/piece
20199700	Fitsch with base plate for B15	10	1.080
20430080	Plug for thread protection B15, color: white	1	0.005

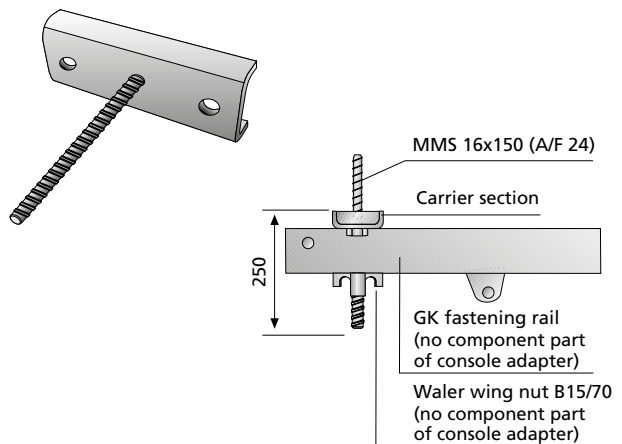
Optional (on request): corrosion protection (electrogalvanized)

Technical data Load capacity N_{Rd}

Concrete class	Usable height in cm	Value in kN
C20/25	15	61.2
C20/25	12	57.4
C20/25	9	43.2
C25/30	15	68.0
C25/30	12	62.3
C25/30	9	46.3
C30/37	15	73.8
C30/37	12	66.5
C30/37	9	48.9

Console adapter

Additional component for the GK-2000 system for attaching *Bridge edge beam brackets* to components without concreted-in or available anchoring parts, e. g. when renovating existing structures.



Item No.	Designation	Packing unit pieces	Weight kg/piece
34046200	Console adapter for GK 2000	1	2.840
74416150	Multi-Monti 16 x 150 (A/F 24)	10	0.240

Special version for mounting on wooden constructions on request!

- Mechanical, dowel-less connection
- Fastening with two approved concrete screws MMS 16 x 150, A/F 24
- Low drilling (Ø 14 x 130 mm)
- Integrated B15 rod for accommodating the GK-2000

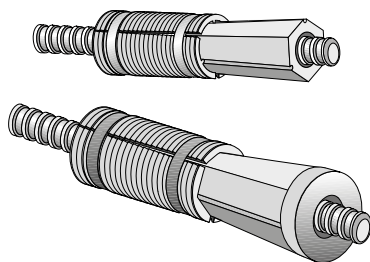
Multi-Monti screw anchor 16 x 150 (A/F 24) (single screw anchor / cracked concrete C20/25)

- Largest permissible tensile load: 12.1 kN
- Largest permissible shearing force: 24.2 kN

Rock anchor B15* / B20

* Approved by German building authority No. Z-21.6-1827

For securing single-sided formwork in concrete or rock walls.
Compatible with *Uni 15*.
Also for attaching Bridge edge beam brackets to components without concreted-in anchoring parts, e. g. when renovating existing structures.
Technical data see *Anchoring technology* page 19



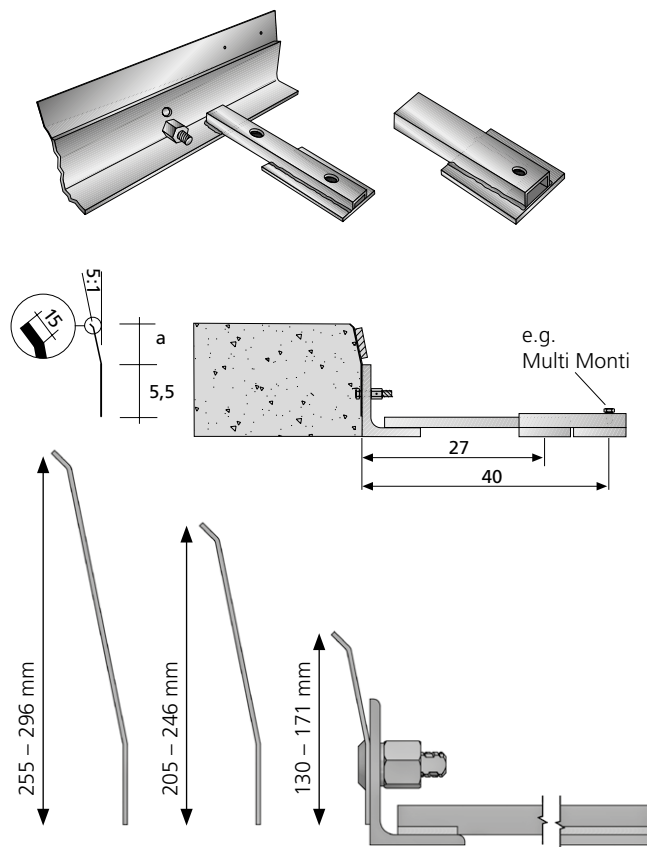
Item No.	Designation	Packing unit pieces/bag	Weight kg/piece
20491810*	Rock anchor B 15	50	0.420
14491810	Rock anchor B 20	15	1.331
20491880**	Rock anchor testing device	1	17.800
20491812	SDS hammer drill 37 x 570 x 450 mm	1	1.700
90210120	Placing tool for rock anchor B 15	1	2.500
90210130	Placing tool for rock anchor B 20	1	6.620
90210140	Cleaning brush for rock anchor	1	0.153
91147240	Torque wrench 400 Nm	1	1.580

**Also available as rental item on request.

Kerb shuttering for deck edges

Kerb shuttering, roadway side with variable-height steel plate on girder section for forming the kerb to RIZ standard Kap 1-5, 6, 7, 9, 10.

Additional component: *S-Beam Extension 200* for preventing seals from being broken through in the kerb area when using anchor bolts.



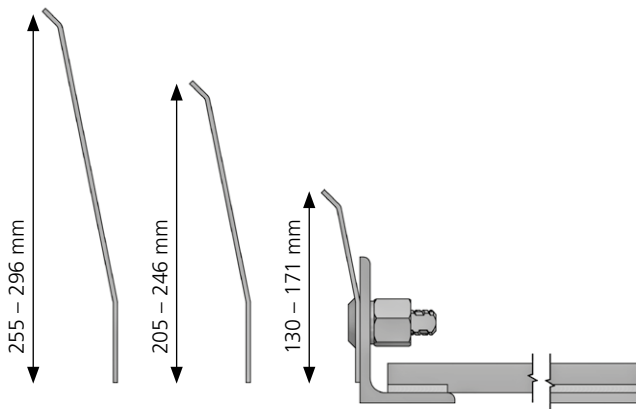
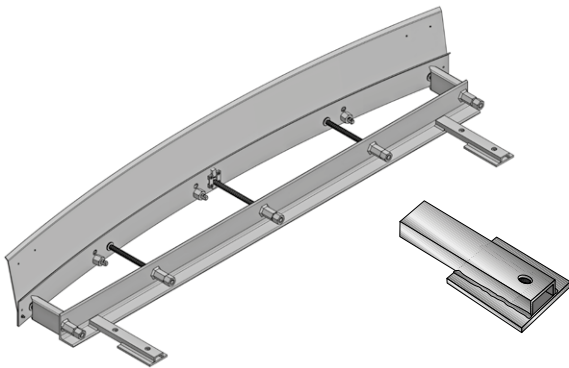
Item No.	Designation	Length m	Packing unit pieces	Weight kg/piece
44220007	Kerb shuttering for deck edges kerb height 7.5 cm (Kap 1-5, 9, 10)	2.00	1	26.820
44220015	Kerb shuttering for deck edges kerb height 15 cm (Kap 7)	2.00	1	30.020
44220020	Kerb shuttering for deck edges kerb height 20 cm (Kap 6)	2.00	1	32.020
44220045	S-Beam Extension 200		1	1.380
74412080	Multi Monti 12 x 80 / A/F 18		25	0.140
74412100	Multi Monti 12 x 100 / A/F 18		25	0.150
44220058	Washer		1	0.005

Rent and individual parts on request.

- Variable-height steel plate on girder section
- Securing the formwork either with ballast or anchoring in the base (anchoring with concrete screws), e.g. *Multi-Monti* screws 12x80 or 12x100 (A/F 18 mm), see working aids, on inquiry
- Steel plate also available with chamfered edge
- *S-Beam Extension 200*: Easily attachable, for widening the space between anchor formwork and plug axis by 13 cm and 40 cm
- Optimum flexibility and inclination-change adjustment

Radial kerb shuttering

Radially adjustable cap framework, with hight-adjustable steel sheet on carrier profile to build the kerb shuttering on side of the road due to RiZ-ING Kap 1-5, 6,7,9,10.



Item No.	Designation	Packing unit piece	Weight kg/piece
45220107	Radial kerb shuttering, kerb height 7.5 cm	1	44.000
45220115	Radial kerb shuttering, kerb height 15 cm	1	46.000
45220120	Radial kerb shuttering, kerb height 20 cm	1	48.000
44220045	S-Beam Extension 200	1	1.380

For rent only.

- Variable-height steel plate on girder section
- Securing the formwork either with ballast or anchoring in the base (anchoring with concrete screws), e.g. *Multi-Monti* screws 12x80 or 12x100 (A/F 18 mm), see working aids, on inquiry
- Steel plate also available with chamfered edge
- *S-Beam Extension 200*: Easily attachable, for widening the space between anchor formwork and plug axis by 13 cm and 40 cm
- Optimum flexibility and inclination-change adjustment
- Min. radius outside and inside 5 m

Metal sheet bend to OUTSIDE:

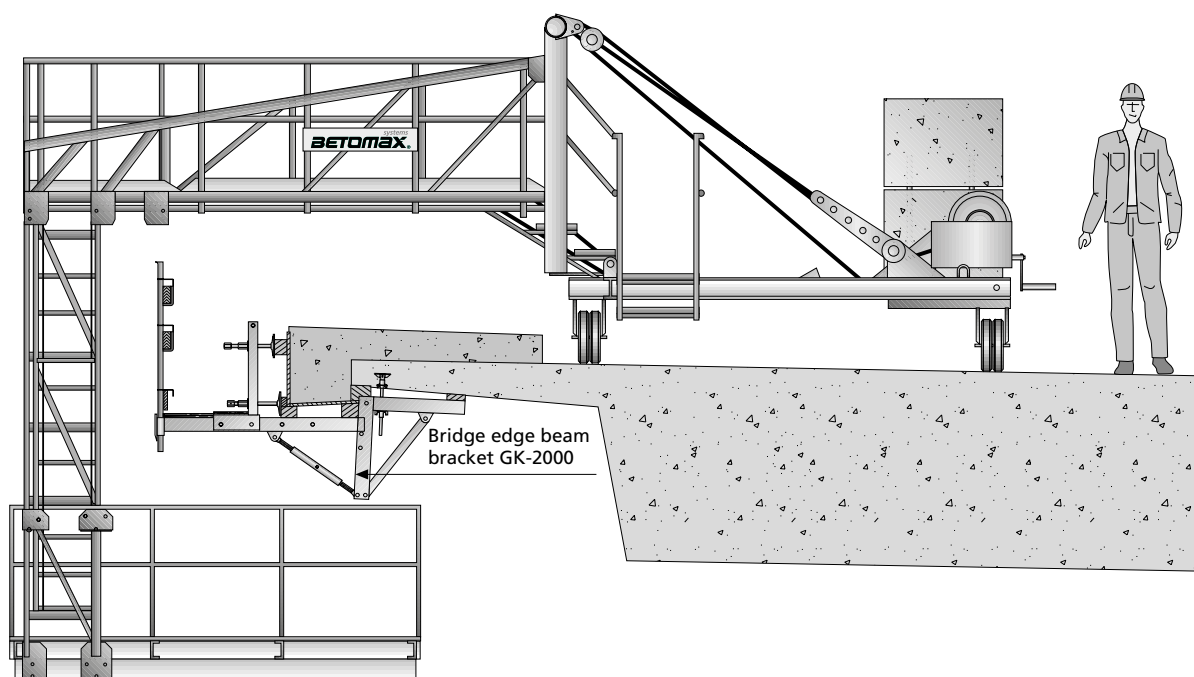
Radius in m	Inside micrometer middle in mm	Inside micrometer right/left in mm
5,0	248	223
7,5	215	198
10,0	198	185
15,0	181	173

Metal sheet bend to INSIDE:

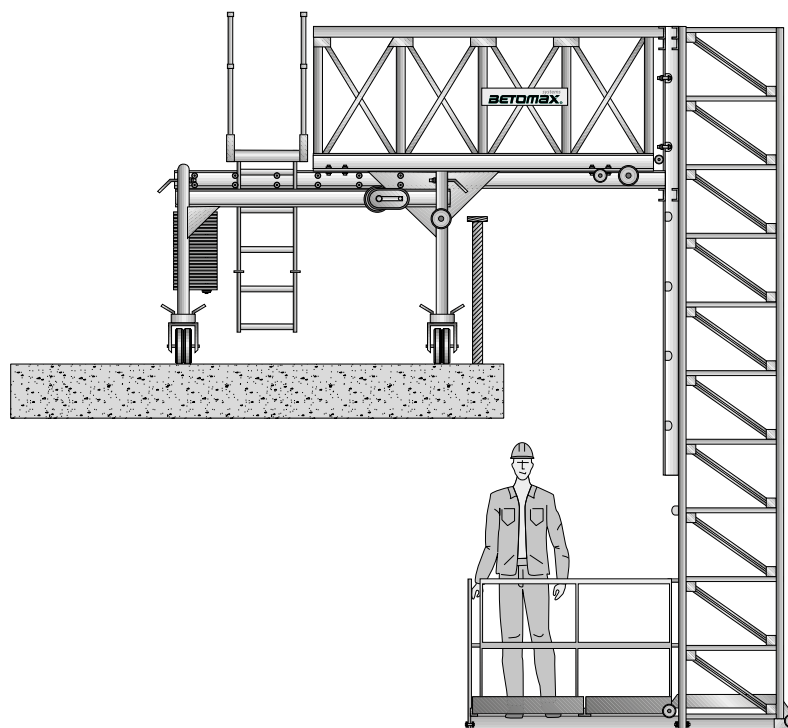
Radius in m	Inside micrometer middle in mm	Inside micrometer right/left in mm
5,0	48	73
7,5	81	98
10,0	98	111
15,0	115	123

Overview – Mounting / inspection trolleys

Mounting trolley MTW 72

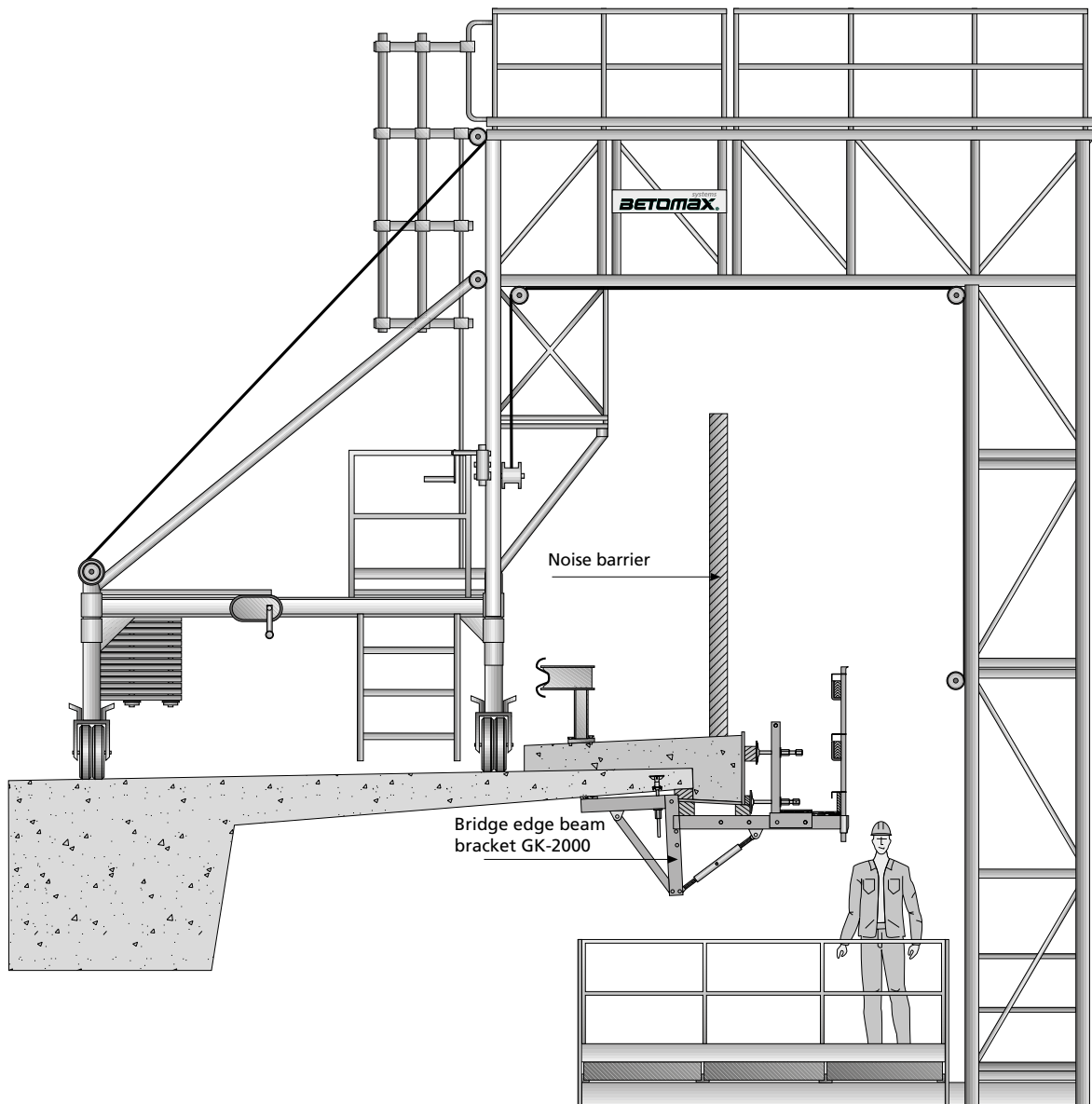


Mounting trolley MTW 2004

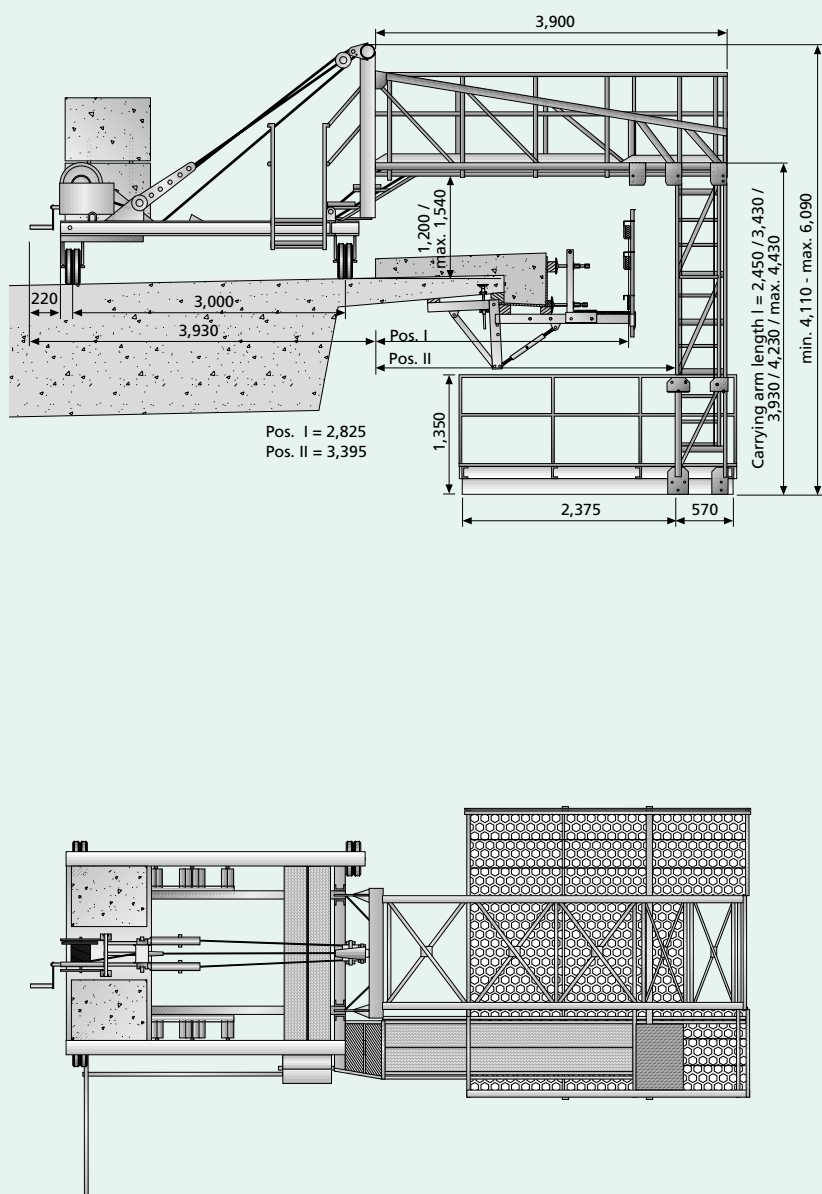


Overview – Mounting / inspection trolleys

Mounting trolley MTW 2001



Mounting trolley MTW 72 – Applications, properties



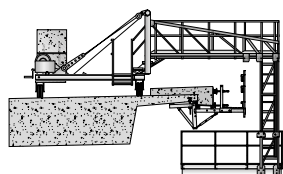
Mobile platform for efficient installation of *Bridge edge beam brackets*, laying pipes or inspection and renovation work on bridge edges.

Permissible load:

150 kg per m² or 6 persons

- The boom and platform are winched up for assembly and dismantling purposes and when relocating the *MTW 72* on the other side of the bridge (detachable crank)
- Safe access in modular structure (gangway with safety ladder)
- **Traction:**
 - manual, by site workers
 - by motor vehicle
 - manual, by drawbar
- **Accessories:**
 - Chassis bearing 10, 17 or 34 cm
 - Perforated plate platform floor
 - Mast extension 20, 50, 80 or 100 cm
 - Suspension-reduction (additional frame) for less working space (insufficient lane width)
- **Dead weight:**
 - Mounting trolley approx. 25 kN (2,5 t)
 - Counterweight 45 kN (4,5 t)
- Further details are contained in the instructions for assembly and use

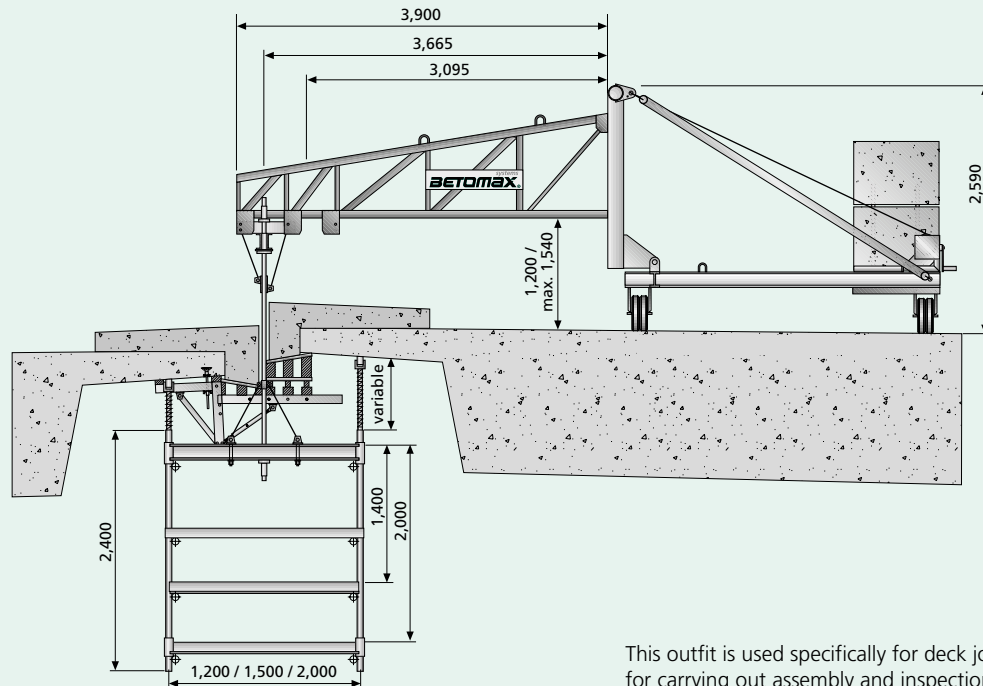
Mounting trolley MTW 72



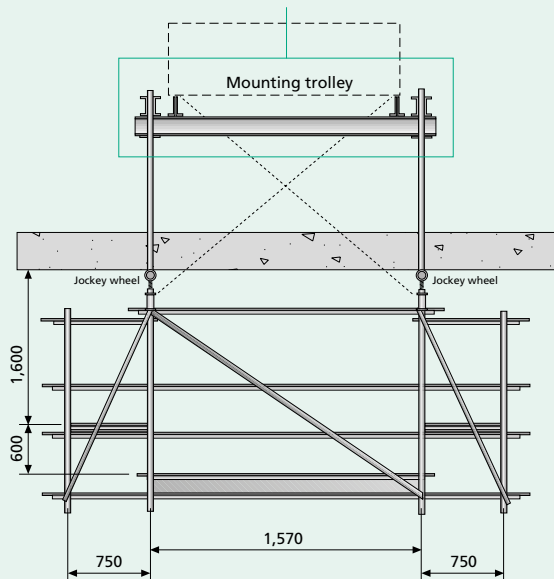
Item No.	Designation	Packing unit piece	Weight kg/piece
44250100	Mounting trolley MTW 72 GS with platform flooring and ladder	1	2,800.000
44282004	Counterweight for MTW 72 GS (4 required)	1	1,125.000
44282007	Upstand 100 mm	1	15.200
44282008	Upstand 170 mm	1	23.200
44282010	Upstand 340 mm	1	29.000
44357020	Mast extension 20 cm	1	10.800
44357050	Mast extension 50 cm	1	80.410
44357080	Mast extension 80 cm	1	92.520
44357100	Mast extension 100 cm	1	101.240
44357110	Suspension-reduction (additional frame)	1	85.000

Also available as rental item on request.

Mounting trolley MTW 72 with deck joint – Applications, properties



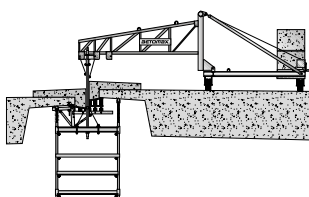
This outfit is used specifically for deck joints. The platform is ideal for carrying out assembly and inspection work underneath the bridge. The flow of traffic on the open side of the bridge is not disturbed.



Longitudinal section of platform trolley

- The deck joint platform is flanged to the *BETOMAX® MTW 72 mounting trolley* by means of an additional cross bar
- For assembly work underneath the bridge
- Platform available in widths of 1.20, 1.50 or 2.00 m
- Can be used in front of and behind the formwork
- One-sided operation saves space
- No additional assembly required; platform is supplied fully made up
- Scaffold tube design with perforated plate floor
- Other platform dimensions available on request
- **Permissible platform load:**
100 kg per m² and 200 kg travelling single load

Mounting trolley MTW 72 with deck joint



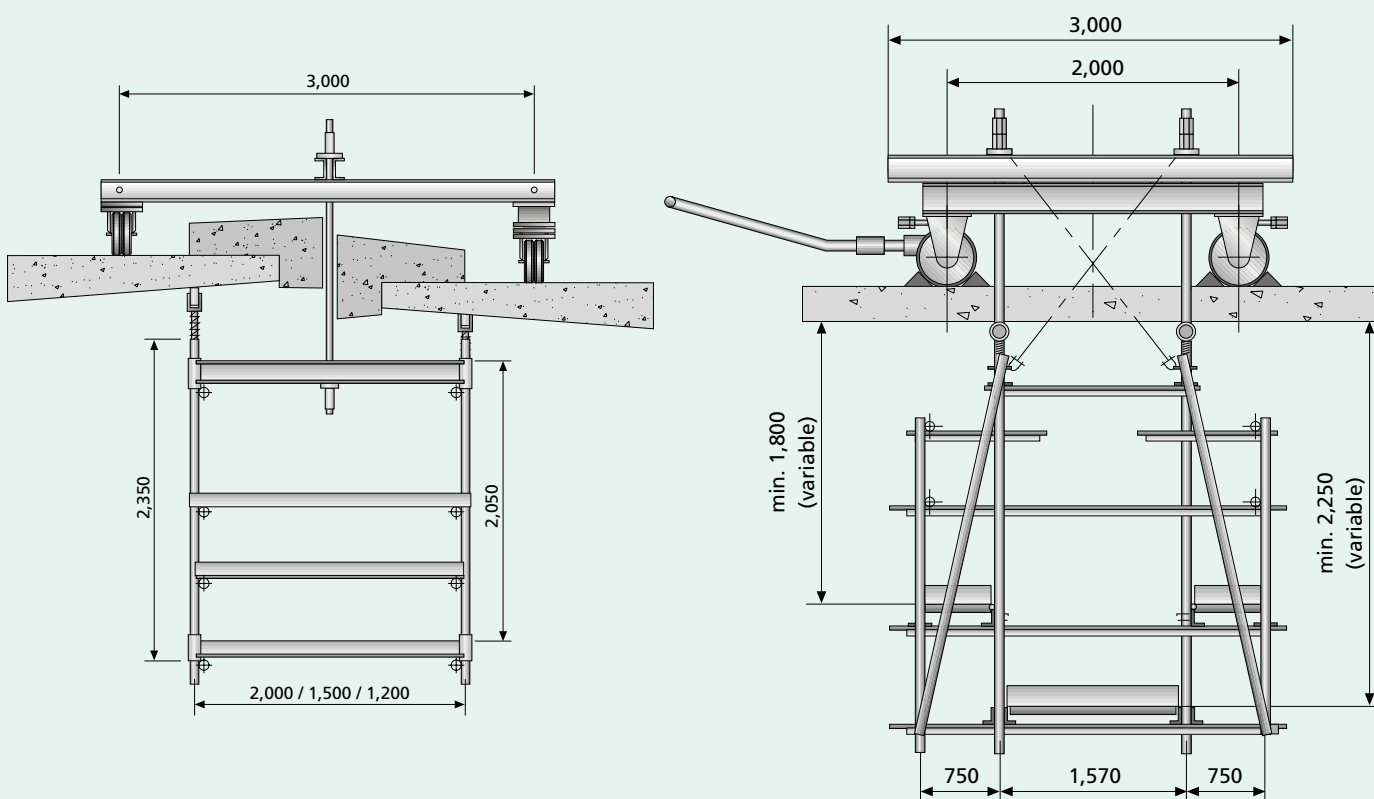
Item No.	Designation	Packing unit piece	Weight kg/piece
44620000	MTW 72 with chassis and boom	1	1,309.800
44633150	MGB deck joint platform (length: 3 m; width: 1.50 m)	1	1,290.000
44633200	MGB deck joint platform (length: 3 m; width: 2 m)	1	1,425.000
44282004	Counterweight for MTW 72 GS (4 required)	1	1,125.000

Also available as rental item on request.

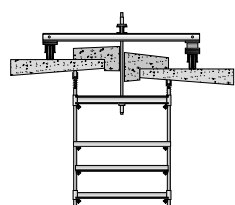
Deck joint platform MGB on bogie – Applications, properties

Mobile platform for efficient installation of BETOMAX® Bridge edge beam brackets, laying pipes or inspection and renovation work underneath deck joints where the bridge decks are located close together.

- **Permissible platform load:**
100 kg per m² and 200 kg travelling single load
- For assembly work underneath the bridge where space is restricted at the deck joint
- Platform available in widths of 1.20, 1.50 or 2.00 m
- Can be used *in front of (assembly) and behind (dismantling) the formwork*



Deck joint platform MGB on bogie



Item No.	Designation	Packing unit piece	Weight kg/piece
44630000	Bogie with cross bar	1	900.000
44633150	MGB deck joint platform (length: 3 m; width: 1.50 m)	1	1,290.000
44633200	MGB deck joint platform (length: 3 m; width: 2.00 m)	1	1,425.000

Also available as rental item on request.

Technical drawing of the BetoMax 1000 concrete pump system, showing dimensions in meters.

Overall dimensions:

- Total width: 4,423
- Width of main body: 2,599
- Width of vertical section: 824
- Total height: 5,180
- Height of vertical section: 500 (repeated 6 times)

Base dimensions:

- Left base width: 1,880
- Right base width: 1,850

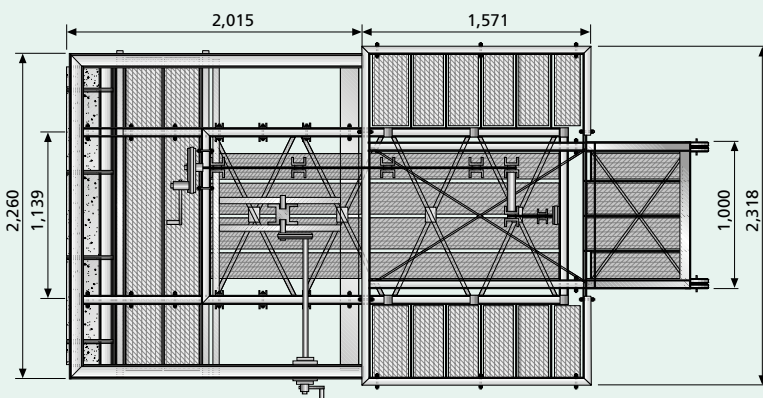
Internal dimensions and features:


- Horizontal distance from left base to vertical section: 1,193.37
- Vertical distance from base to top of main body: 1,330
- Horizontal distance from left base to vertical section: 300 (repeated 3 times)

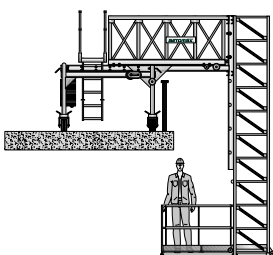
The drawing includes a worker figure for scale and the brand name **BETOMAX** on the side of the main body.

Permissible load:
150 Kg per m² or 4 persons

- Intricate design without separate parts except for counterweights (steel plates) and access components
- The boom, mast and platform are winched up to the appropriate position for assembly and dismantling purposes and when relocating the *MTW 2004* on the other side of the bridge
- Safe access within structure
- **Traction:**
 - manual, by site workers
 - by motor vehicle
 - manual, by drawbar
- Fast assembly and dismantling thanks to purpose-built, pre-constructed design
- Variable height running gear (10 cm steps), adjustable depending on height and inclination of building structure
- Individually steered and braked wheel sets
- **Dead weight:**
Mounting trolley approx. 64.53 kN (6.4 metric tons) incl. counterweight
- Further details are contained in the instructions for assembly and use



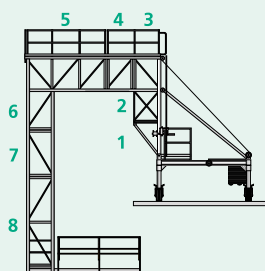
Mounting trolley MTW 2004	<i>Item No.</i>	<i>Designation</i>	<i>Packing unit piece</i>	<i>Weight kg/piece</i>
	44270000	Mounting trolley MTW 2004	1	6,453.000
Also available as rental item on request.				



Mounting trolley MTW 2001 – Applications, properties

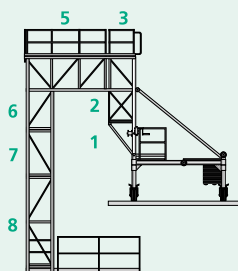
Mobile platform for special operations, e.g. renovation and new construction, specifically on structures with existing noise barriers not exceeding 3.50 m:

- Installation of *Bridge edge beam brackets* before demolition of deck edge
- Dismantling *Bridge edge beam brackets* upon completion of deck edge with pre-assembled noise barriers
- Structural inspection and repair work on bridge edges
- Installing/dismantling supply lines underneath bridge superstructures
- Simple on-site assembly of pre-constructed individual purpose-built components
- Modular design of *system components* for maximum versatility
- Safe access within structure
- Individually steered and braked wheel sets
- Variable height running gear depending on height and inclination of building structure
- Available with telescopic platform (up to 4.70 m) in conjunction with *MTW 2000*
- **Further details are contained in the instructions for assembly and use**



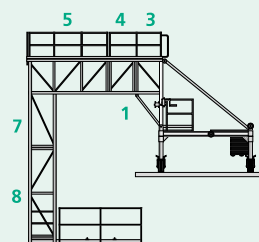
Configuration 1 (full version)

- Noise barrier

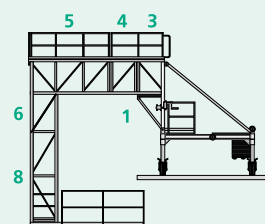


Configuration 2 (w/o 4)

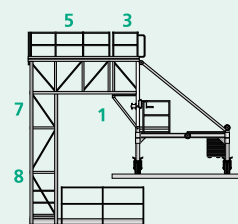
- Noise barrier



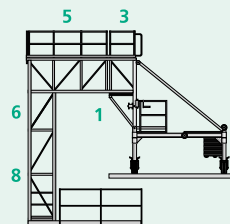
Configuration 3 (w/o 2 and 6)



Configuration 4 (w/o 2 and 7)

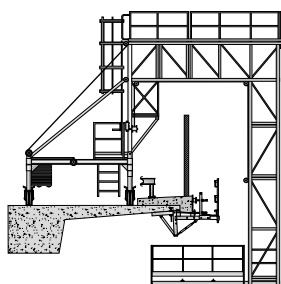


Configuration 5 (w/o 2, 4 and 6)



Configuration 6 (w/o 2, 4 and 7)

Mounting trolley MTW 2001



Item No.	Designation	Packing unit piece	Weight kg/piece
44260000	Mounting trolley MTW 2001 (full version)	1	11,800.000
Also available as rental item on request.			

Load values for the illustrated variant

Load values for the illustrated variant:

Permissible load:

6 kN (600 kg) or 6 persons

Dead weight (without counterweight):

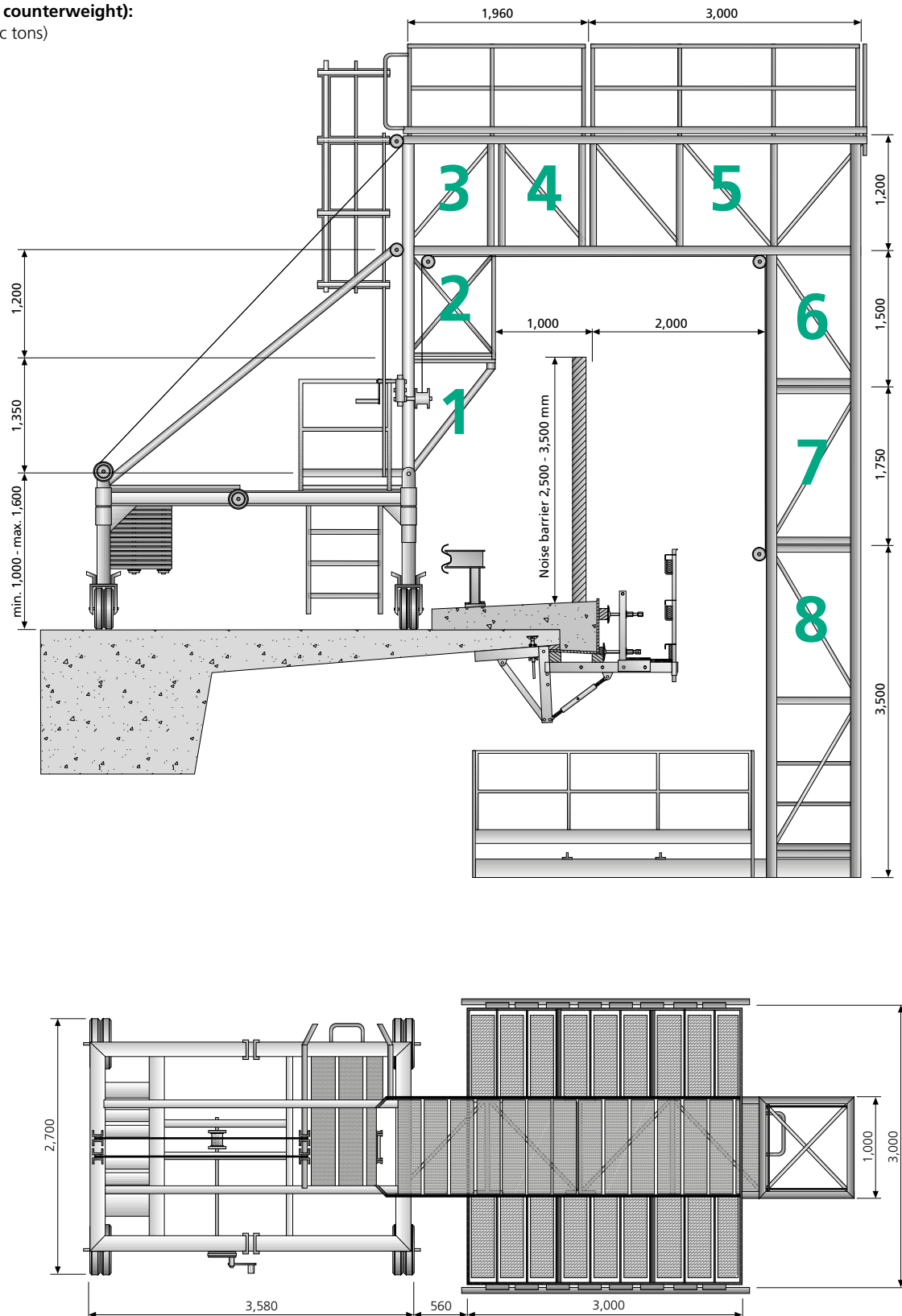
approx. 58 kN (5.8 metric tons)

Counterweight:

60 kN (6.0 metric tons)

Traction:

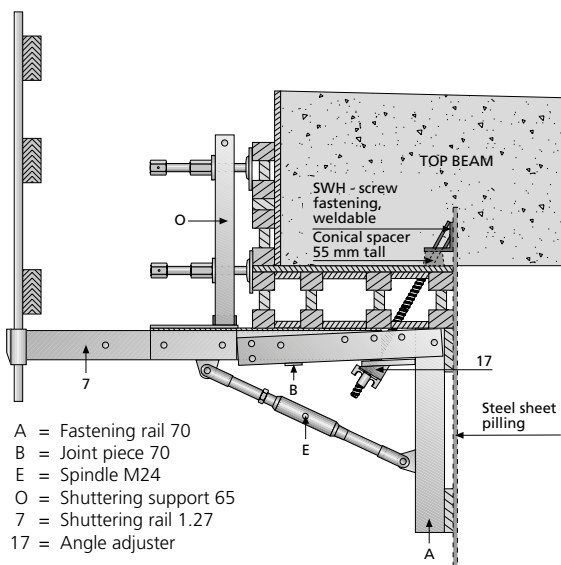
- Drawbar
- Motor vehicle



Sheet piling console SWK 2000 / 70 und 83.5 – Applications, properties

The BETOMAX® sheet piling console 2000 / 70 -s facilitates the safe and efficient placing of beams on top of sheet piling. It offers all the familiar benefits of the BETOMAX® Bridge edge beam bracket GK-2000 as regards adjustment and safety systems (e.g. gangway with safety rail posts).

Sheet piling console SWK 2000 / 70-s

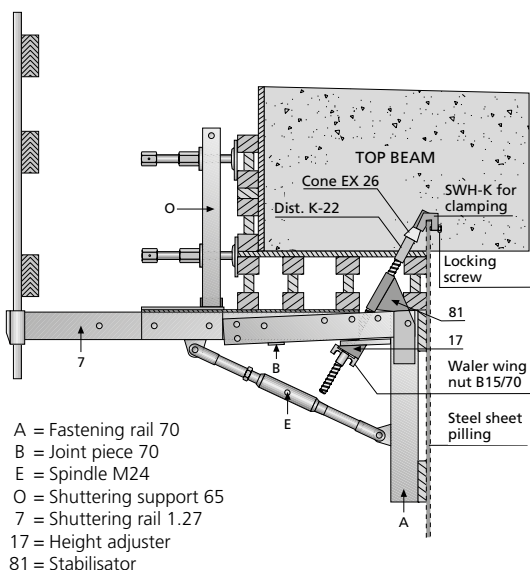


Item No.	Designation	Packing unit piece	Weight kg/piece
44201500	Sheet piling console SWK 2000 / 70-s	1	75.070
44201510	SWH BETOMAX® 15, screw fastening	1	1.660
44201520	SWH BETOMAX® 15, weldable	1	1.240
44201550	Spacer* for concrete cover 55 mm	1	0.060

Also available as rental item on request.

* Puller for spacer for hire on request.

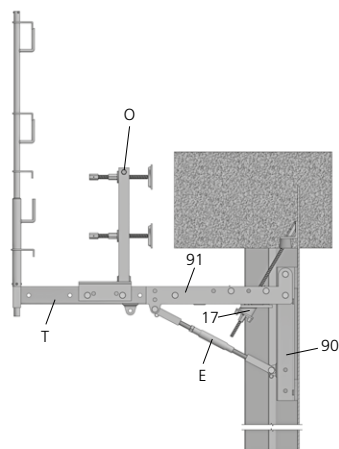
Sheet piling console SWK 2000 / 70-k



Item No.	Designation	Packing unit piece	Weight kg/piece
44201501	Sheet piling console SWK 2000 / 70-k	1	77.970
44201530	SWH BETOMAX® 15, for clamping	1	1.690
60526900	Cone EX 26	250	15.530/1000 pcs.
63122130	Dist K-22, rough, cut lengths	meter	0.210/m

Also available as rental item on request.

Sheet piling console SWK 2000 / 83.5



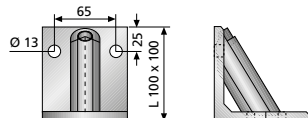
Item No.	Designation	Packing unit piece	Weight kg/piece
44201504	Sheet piling console SWK 2000 / 83.5	1	78.500
44201510	SWH BETOMAX® 15, screw fastening	1	1.660
44201520	SWH BETOMAX® 15, weldable	1	1.240
44201550	Spacer* for concrete cover 55 mm	1	0.060
44201530	SWH BETOMAX® 15, clamping	1	1.690
20430080	Plug for thread protection B15, color: white	-	0.005
60526900	Cone EX 26	250	15.530 /1000 pcs.
63122130	Dist K-22, rough, cut lengths	meter	0.210 /m

Also available as rental item on request.

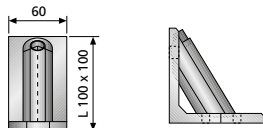
* Puller available on request.

Sheet piling console SWK 2000 accessories

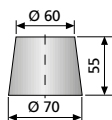
Sheet piling console (screw fastening)



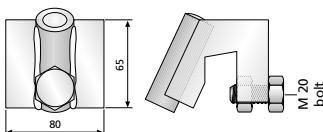
Sheet piling console (weldable)



Spacer for 55 mm concrete cover (recoverable)*



Sheet piling console (for clamping)



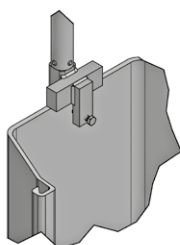
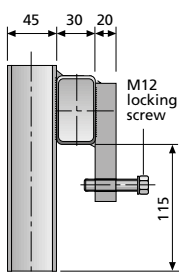
Item No.	Designation	Packing unit pieces	Weight kg/piece
44201510	SWH BETOMAX® 15, screw fastening	1	1.660
44201520	SWH BETOMAX® 15, weldable	1	1.240
44201550	Spacer* for concrete cover 55 mm	1	0.060
14392020	Face concrete plug MKK B20	60 pcs./bag	0.337
44201530	SWH BETOMAX® 15, clamping	1	1.690
20430080	Plug for thread protection B15, color: white	-	0.005
60526900	Cone EX 26	250	15.530 /1000 pcs.
63122130	Dist K-22, rough, cut lengths	meter	0.210 /m

* Puller available on request.

Temporary safety barrier – subsequent assembly

Greif® for sheet piling

Bracket for securely installing BETOMAX® safety rail posts on sheet-pile profiles and similar configurations up to 27 mm thick.



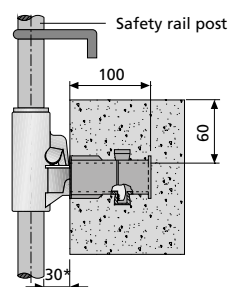
Item No.	Designation	Packing unit piece	Weight kg/piece
35789700	Greif® for sheet piling	1	3.220

Also available as rental item on request.

Temporary safety barrier – concreted

Stecker

Bracket for locating the *BETOMAX® safety rail post* on the edges of concrete floors and bridge superstructures in conjunction with concreted-in Stecker sleeve.



* Can be enlarged by extension on request

Item No.	Designation	Packing unit pieces/bag	Weight kg/piece
35637000	Stecker	25	1.010
35640000	Stecker sleeve	25	0.040
35641101	Cap for Stecker sleeve, self-adhesive	50	0.055
35637115	Stecker-Extension	25	1.900

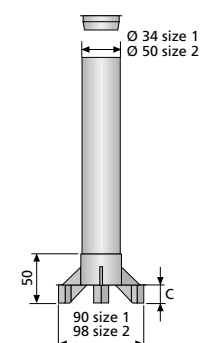
Connector and connector-extension for hire on request.

Properties, benefits

- Simple installation of Stecker sleeve on inside of edge formwork
- Stecker engages in sleeve after striking and before fall protection equipment is installed
- Following work, such as sealing, can proceed unhindered thanks to lateral anchoring
- Cover prevents penetration of concrete during concreting
- Application stair railing

Krabs

Bracket for locating the *BETOMAX® safety rail post* on deck edges. Attached to formwork at deck edges (fixture remains in concrete).



Item No.	Designation	Packing unit	Weight kg/unit
48613000	Krabs size 1	50 pcs./bag	0.030/pc.
48629000	Krabs size 2	50 pcs./bag	0.050/pc.
63034000	Round sec. tube K 34/40	50 m/bundle	0.350/m
63050050	Round sec. tube K 50/54	40 m/bundle	0.410/m
66434900	Cap size 34	500 pcs./bag	5.750/1000 pc.
66450400	Cap size 50	500 pcs./bag	7.400/1000 pc.
39035000	Stainless steel nails 35 mm	200 pcs./bag	0.780/1000 pc.

Concrete cover C :

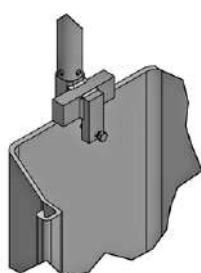
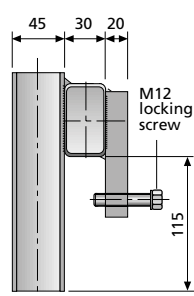
- Size 1 = 20 mm
- Size 2 = 30 mm

Calculation of tube length:

L = Component thickness - C

Greif® for sheet piling

Bracket for securely installing *BETOMAX® safety rail posts* on sheet-pile profiles and similar configurations up to 27 mm thick.



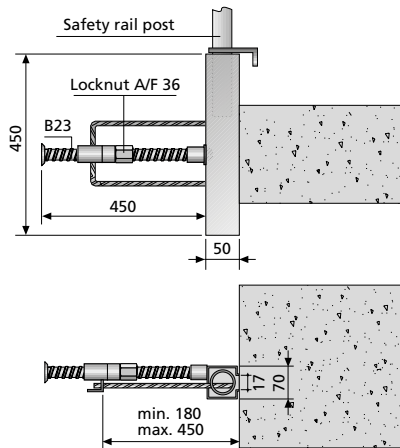
Item No.	Designation	Packing unit piece	Weight kg/piece
35789700	Greif® for sheet piling	1	3.220

Also available as rental item on request.

Temporary safety barrier – subsequent assembly

B-Greif® for bridge edges

Bracket for locating the *BETOMAX®* safety rail post on the edges of bridge superstructures.



Item No.	Designation	Packing unit piece	Weight kg/piece
35789600	B-Greif® for bridge edges, galvanized	1	6.760

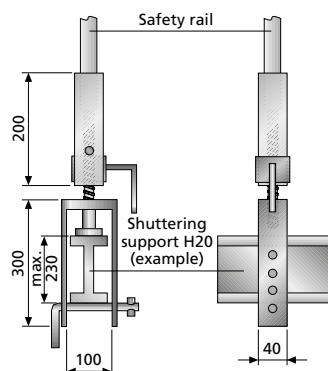
Also available as rental item on request.

Properties, benefits

- Simple installation on the edge of bridge superstructures by pushing on and bracing against projecting reinforcement loop
- Sealing work on the edges of bridge superstructures can be performed without hindrance
- No anchoring in concrete

Greif® New

Clamp-type safety rail post bracket. Suitable for timber girders and steel sections.



Item No.	Designation	Packing unit piece	Weight kg/piece
35789900	Greif® New	1	3.860

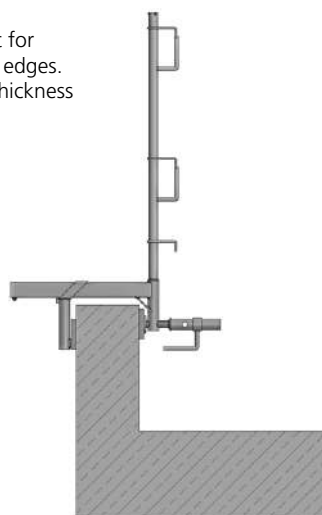
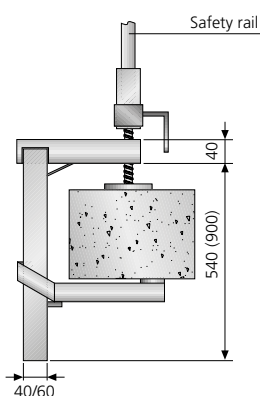
Also available as rental item on request.

Benefits

- Spindle sleeve can be tightened without special tools
- Quick adjustment by fixed positions for cross bar
- Rotating bearing for the edge board

Greif® for deck edges

Clamp-type safety rail post bracket for vertical and horizontal component edges. Clamps to maximum component thickness of 40 cm or 80 cm.



Item No.	Designation	Packing unit piece	Weight kg/piece
35789950	Greif® for deck edges, adjustment range up to 40 cm	1	5.100
35789980	Greif® XXL 80 for deck edges, adjustment range up to 80 cm	1	7.590

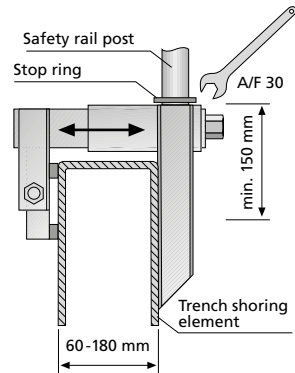
Also available as rental item on request.

Benefits

- Quick adjustment by engaging sliding leg
- Spindle sleeve can be tightened without special tools

Greif® for trench shoring

Clampable safety rail post bracket for use on trench shoring elements.
Suitable for element or wall thickness of 60 – 180 mm.



Item No.	Designation	Packing unit piece/bag	Weight kg/piece
35789300	Greif® for trench shoring	1	6.940

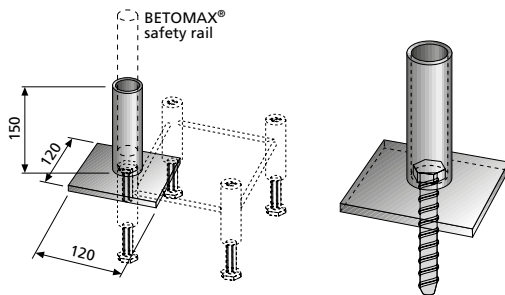
Also available as rental item on request.

Properties, benefits

- Easy assembling due to vertical mounting on the trench shoring element
- Big adjustment range
- Quickly ready
- No further fixing necessary

Safety rail post holder

Accessory for Spl 1 / Spl 2 anchor.



Item No.	Designation	Packing unit piece	Weight kg/piece
46121215	Safety rail post-holder inclusive M16 bolt	1	2.680
74416120	Multi Monti 16 x 120 / A/F 24	10	0.180

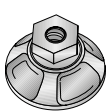
- For installing fall protection systems (BETOMAX® safety rail post) during construction work
- Attaches to crash barrier anchor upon completion of deck
- Can also be attached to other components (plug and screw) where temporary safety measures are required
- Mounting on concrete elements is possible with help of Multi Monti 16 x 120 (A/F 24)

K-TEC-3s® concrete anchor bolt

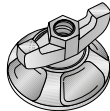
K-TEC-3s® with B 15 thread



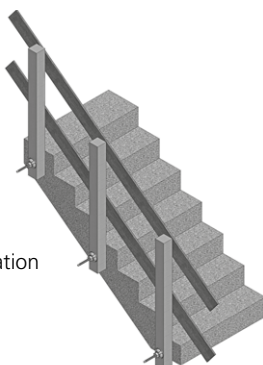
Kipp B 15 round with hex nut, galvanized



Kipp B 15 round with wing nut, galvanized



Example for application

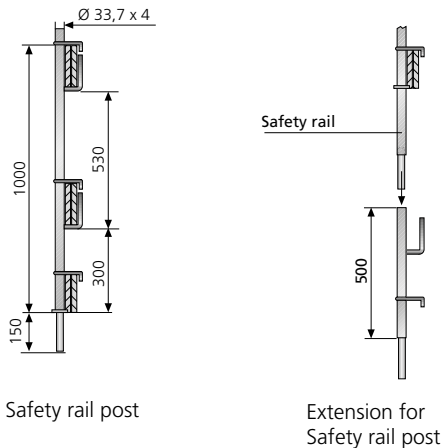


Item No.	Designation	Packing unit piece	Weight kg/piece
18602230	K-TEC-3s® B 15 B 12 x 10 / L = 230 mm	1	0.300
18602280	K-TEC-3s® B 15 B 12 x 10 / L = 280 mm	1	0.400
18602400	K-TEC-3s® B 15 B 12 x 10 / L = 400 mm	1	0.580
18602600	K-TEC-3s® B 15 B 12 x 10 / L = 600 mm	1	0.800
18602814	SDS hammer drill 14 x 100 x 160	1	0.110
18602700	K-TEC-3s® control gauge, galvanized	1	0.040
20020940	Kipp B 15 round with wing nut, galvanized	1	0.780
20020950	Kipp B 15 round with hex nut, galvanized	1	0.680

Further closure means see *Anchoring technology* page 5 and 6

Safety rail post

Complies with the safety rules for lateral protection and roof safety barriers as a means of safeguarding against falling (BG-I 807 of October 2002). According to DIN EN 12811.



Safety rail post

Extension for
Safety rail post

Item No.	Designation	Packing unit piece/unit	Weight kg/piece
35213250	Safety rail post, galvanized	1	4.600
35350000	Extension for Safety rail post	1	5.760

Also available as rental item on request.

Safety rail post for erecting a temporary side safety system

- For BETOMAX® GK 2000 Bridge edge beam brackets
- For sheet piling
- For shuttering supports and timber
- For deck edges and bridge superstructures
- For flights of stairs
- In conjunction with BETOMAX® railing and crash barrier anchors on bridges

Decking board

Decking boards are chipped into safety railposts for safety barrier.

BETOMAX®

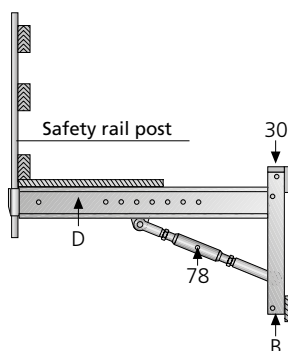
BETOMAX®

Item No.	Designation	Packing unit pieces/bundle	Weight kg/unit
35350180	Decking board 180 cm	1	3.400
35350250	Decking board 250 cm	1	4.800

For rent only.

Wing console

Used as working scaffold and safety barrier.



Item No.	Designation	Packing unit piece	Weight kg/piece
44102220	Wing console	1	34.500
35213250	Safety rail post	1	4.600
35350000	Extension for Safety rail post	1	5.760

Also available as rental item on request.

30 = Suspension
B = Joint piece 70
D = Shuttering rail 1.27
78 = Spindle M30

High-quality raw materials and modern production sites constitute the guarantor for the technical competence of our products. For five decades, BETOMAX® *systems* has been working to the 'Made in Germany' concept of quality. Be it rationally manufactured series products or tailor-made individual solutions: BETOMAX® *systems* delivers a complete range of intelligent products and solutions for structural concrete work and civil engineering.

Anchoring technology

Tubular spreader technology

Reinforcement technology

Bridge building technology

Safety technology

Construction joint technology

Shuttering system technology

Building materials technology

Spacer technology

Work aids

When it matters...

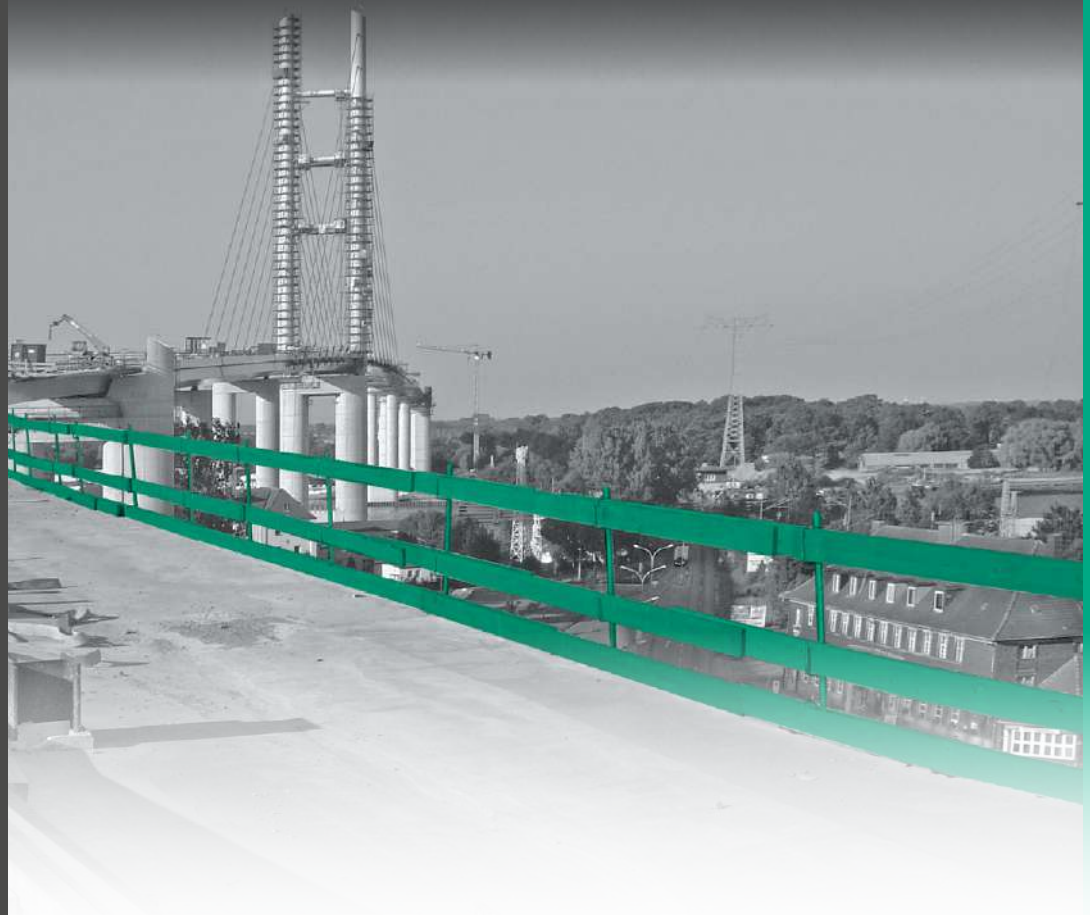


systems
BETOMAX®

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www.betomax.de

Subject to technical change. 03 / 2019





Protection systems
Temporary safety barrier

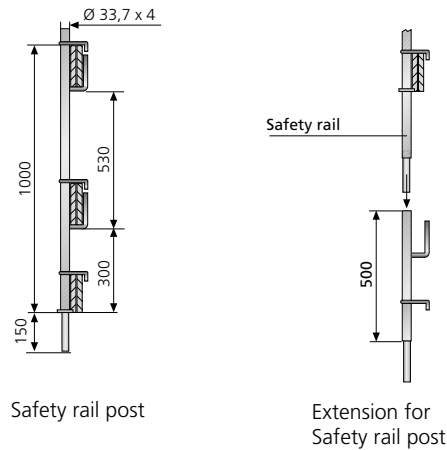


When it matters...

systems
BETOMAX®
GmbH & Co. KG

Safety rail post

Complies with the safety rules for lateral protection and roof safety barriers as a means of safeguarding against falling (BG-I 807 of October 2002). According to DIN EN 12811.



Item No.	Designation	Packing unit piece/unit	Weight kg/piece
35213250	Safety rail post, galvanized	1	4.600
35350000	Extension for Safety rail post	1	5.760

Also available as rental item on request.

Safety rail post for erecting a temporary side safety system

- For BETOMAX® GK-2000 Bridge edge beam brackets
- For sheet piling
- For shuttering supports and timber
- For deck edges and bridge superstructures
- For flights of stairs
- In conjunction with BETOMAX® railing and crash barrier anchors on bridges

Decking board

Decking boards are chipped into safety railposts for safety barrier.

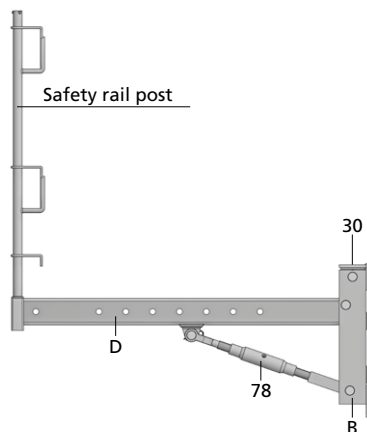


Item No.	Designation	Packing unit pieces/bundle	Weight kg/unit
35350180	Decking board 180 cm	1	3.400
35350250	Decking board 250 cm	1	4.800

For rent only.

Wing console

Used as working scaffold and safety barrier.



Item No.	Designation	Packing unit piece	Weight kg/piece
44102220	Wing console	1	34.500
35213250	Safety rail post	1	4.600
35350000	Extension for Safety rail post	1	5.760

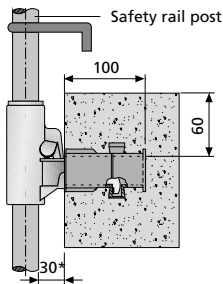
Also available as rental item on request.

30 = Suspension
B = Joint piece 70
D = Shuttering rail 1.27
78 = Spindle M30

Temporary safety barrier – concreted

Stecker

Bracket for locating the *BETOMAX®* safety rail post on the edges of concrete floors and bridge superstructures in conjunction with concreted-in Stecker sleeve.



* Can be enlarged by extension on request

Item No.	Designation	Packing unit pieces/bag	Weight kg/piece
35637000	Stecker	25	1.010
35640000	Stecker sleeve	25	0.040
35641101	Cap for Stecker sleeve, self-adhesive	50	0.055
35637115	Stecker-Extension	25	1.900

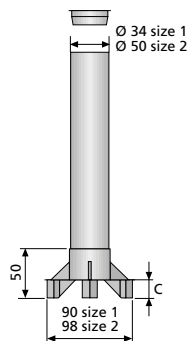
Connector and connector-extension for hire on request.

Properties, benefits

- Simple installation of Stecker sleeve on inside of edge formwork
- Stecker engages in sleeve after striking and before fall protection equipment is installed
- Following work, such as sealing, can proceed unhindered thanks to lateral anchoring
- Cover prevents penetration of concrete during concreting
- Application stair railing

Krabs

Bracket for locating the *BETOMAX®* safety rail post on deck edges. Attached to formwork at deck edges (fixture remains in concrete).



Item No.	Designation	Packing unit	Weight kg/unit
48613000	Krabs size 1	50 pcs./bag	0.030/pc.
48629000	Krabs size 2	50 pcs./bag	0.050/pc.
63034000	Round sec. tube K 34/40	50 m/bundle	0.350/m
63050050	Round sec. tube K 50/54	40 m/bundle	0.410/m
66434900	Cap size 34	500 pcs./bag	5.750/1000 pcs.
66450400	Cap size 50	500 pcs./bag	7.400/1000 pcs.
39035000	Stainless steel nails 35 mm	200 pcs./bag	0.780/1000 pcs.

Concrete cover C :

- Size 1 = 20 mm
- Size 2 = 30 mm

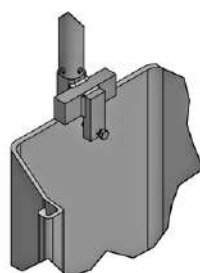
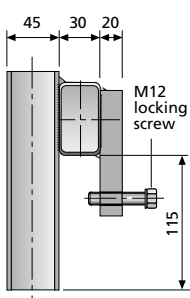
Calculation of tube length:

$L = \text{Component thickness} - C$

Temporary safety barrier – subsequent assembly

Greif® for sheet piling

Bracket for securely installing *BETOMAX®* safety rail posts on sheet-pile profiles and similar configurations up to 27 mm thick.

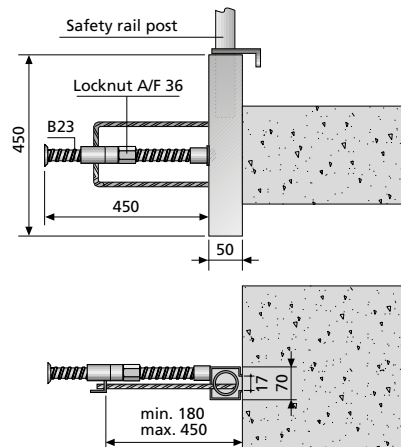


Item No.	Designation	Packing unit piece	Weight kg/piece
35789700	Greif® for sheet piling	1	3.220

Also available as rental item on request.

B-Greif® for bridge edges

Bracket for locating the BETOMAX® safety rail post on the edges of bridge superstructures.



Item No.	Designation	Packing unit piece	Weight kg/piece
35789600	B-Greif® for bridge edges, galvanized	1	6.760

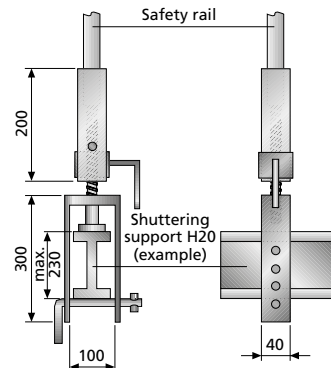
Also available as rental item on request.

Properties, benefits

- Simple installation on the edge of bridge superstructures by pushing on and bracing against projecting reinforcement loop
- Sealing work on the edges of bridge superstructures can be performed without hindrance
- No anchoring in concrete

Greif® New

Clamp-type safety rail post bracket. Suitable for timber girders and steel sections.



Item No.	Designation	Packing unit piece	Weight kg/piece
35789900	Greif® New	1	3.860

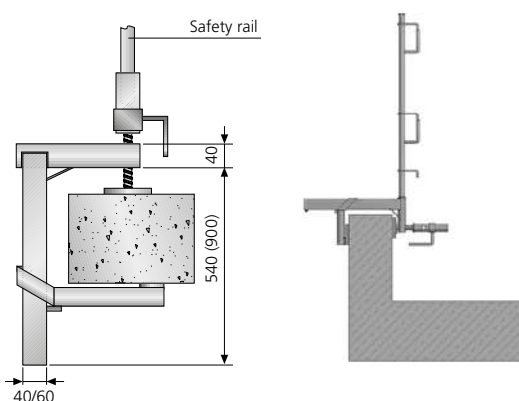
Also available as rental item on request.

Benefits

- Spindle sleeve can be tightened without special tools
- Quick adjustment by fixed positions for cross bar
- Rotating bearing for the edge board

Greif® for deck edges

Clamp-type safety rail post bracket for vertical and horizontal component edges. Clamps to maximum component thickness of 40 cm or 80 cm.



Item No.	Designation	Packing unit piece	Weight kg/piece
35789950	Greif® for deck edges, adjustment range up to 40 cm	1	5.100
35789980	Greif® XXL 80 for deck edges, adjustment range up to 80 cm	1	7.590

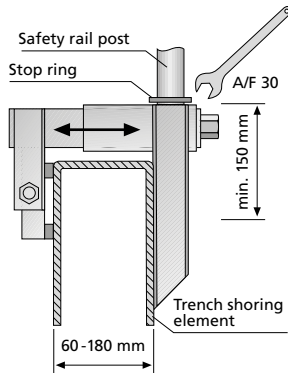
Also available as rental item on request.

Benefits

- Quick adjustment by engaging sliding leg
- Spindle sleeve can be tightened without special tools

Greif® for trench shoring

Clampable safety rail post bracket for use on trench shoring elements. Suitable for element or wall thickness of 60 – 180 mm.



Item No.	Designation	Packing unit piece/bag	Weight kg/piece
35789300	Greif® for trench shoring	1	6.940

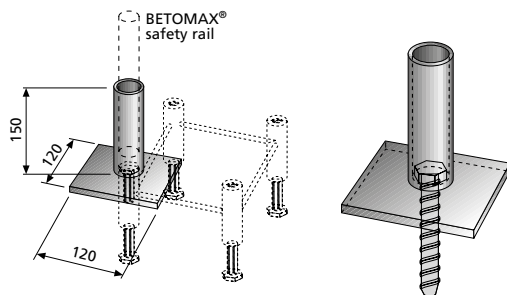
Also available as rental item on request.

Properties, benefits

- Easy assembling due to vertical mounting on the trench shoring element
- Big adjustment range
- Quickly ready
- No further fixing necessary

Safety rail post holder

Accessory for Spl 1 / Spl 2 anchor.



Item No.	Designation	Packing unit piece/bag	Weight kg/piece
46121215	Safety rail post-halter inclusive M16 bolt	1	2.680
74416120	Multi Monti 16 x 120 / A/F 24	10	0.180

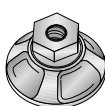
- For installing fall protection systems (BETOMAX® safety rail post) during construction work
- Attaches to crash barrier anchor upon completion of deck
- Can also be attached to other components (plug and screw) where temporary safety measures are required
- Mounting on concrete elements is possible with help of Multi Monti 16 x 120 (A/F 24)

K-TEC-3s® concrete anchor bolt

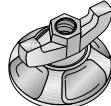
K-TEC-3s® with B 15 thread



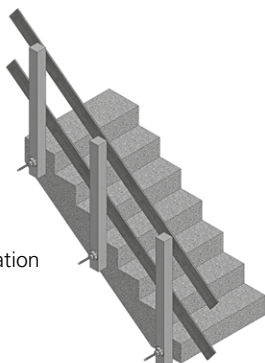
Kipp B 15 round with hex nut, galvanized



Kipp B 15 round with wing nut, galvanized



Example for application



Item No.	Designation	Packing unit piece	Weight kg/piece
18602230	K-TEC-3s® B 15 B 12 x 10 / L = 230 mm	1	0.300
18602280	K-TEC-3s® B 15 B 12 x 10 / L = 280 mm	1	0.400
18602400	K-TEC-3s® B 15 B 12 x 10 / L = 400 mm	1	0.580
18602600	K-TEC-3s® B 15 B 12 x 10 / L = 600 mm	1	0.800
18602814	SDS hammer drill 14 x 100 x 160	1	0.110
18602700	K-TEC-3s® control gauge, galvanized	1	0.040
20020940	Kipp B 15 round with wing nut, galvanized	1	0.780
20020950	Kipp B 15 round with hex nut, galvanized	1	0.680

Further closure means see *Anchoring technology* page 5 and 6

High-quality raw materials and modern production sites constitute the guarantor for the technical competence of our products. For five decades, BETOMAX® *systems* has been working to the 'Made in Germany' concept of quality. Be it rationally manufactured series products or tailor-made individual solutions: BETOMAX® *systems* delivers a complete range of intelligent products and solutions for structural concrete work and civil engineering.

Anchoring technology

Tubular spreader technology

Reinforcement technology

Bridge building technology

Safety technology

Construction joint technology

Shuttering system technology

Building materials technology

Spacer technology

Work aids



When it matters...

systems
BETOMAX®

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Dyckhofstraße 1 41460 Neuss Germany
Phone +49 2131 2797-0
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www.betomax.de

Subject to technical change. 03 / 2019





Injection hose systems

Swelling strips

Water barriers



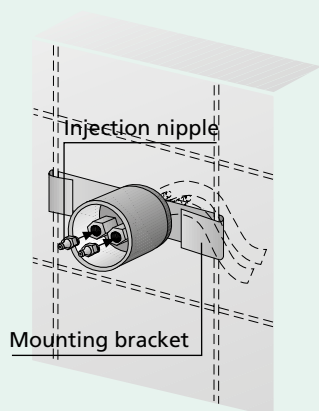
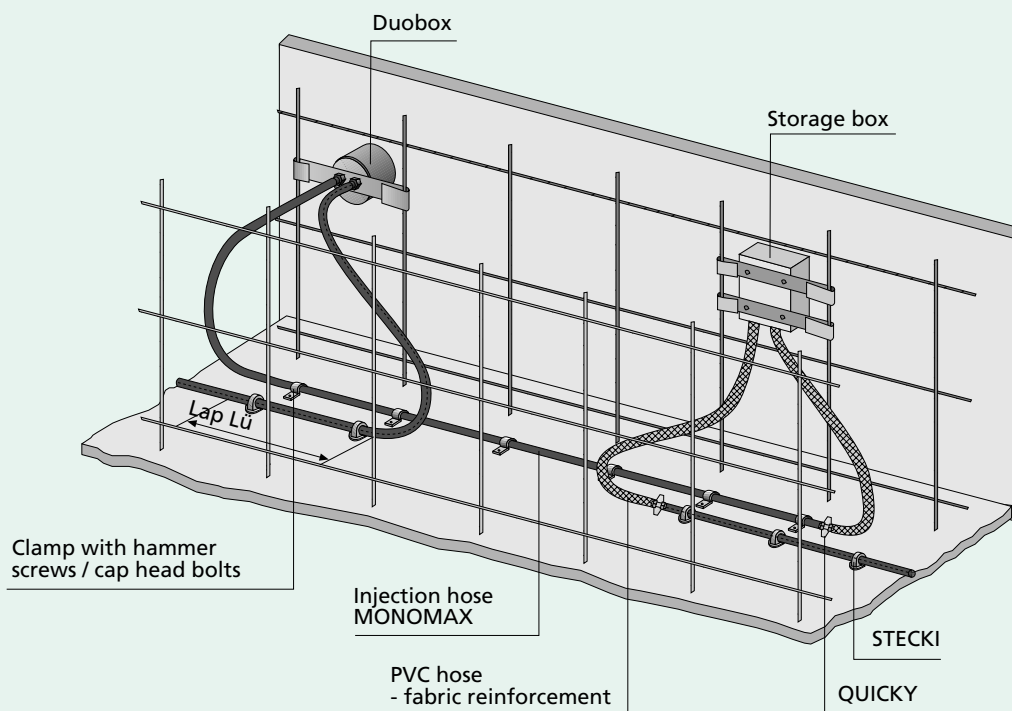
When it matters...

BETOMAX[®]
systems
GmbH & Co. KG

BETOMAX® - Injection hose systems – Applications, properties, benefits

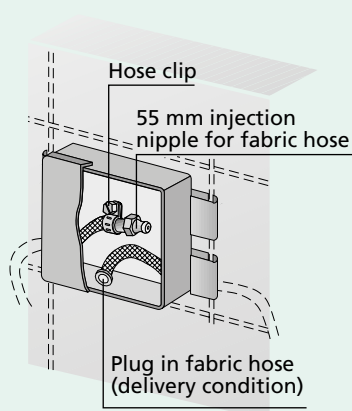
Ever-greater importance is being attached to sealing concrete structures. Although construction joints are unavoidable in structural components for design and practical reasons, the damage that is often caused by moisture at such locations can be avoided. The extent of work and costs associated with remedial work are high. The growing awareness of quality and durability calls for new design solutions that guarantee long-term protection against penetration.

MONOMAX - Injection hose system



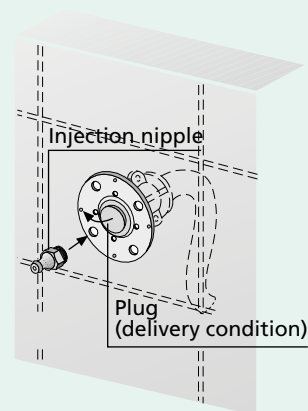
Duobox for:

- MONOMAX
- fabric hose



Storage box for:

- MONOMAX ready-made
- P400 ready-made



Nailed fitting for:

- MONOMAX
- fabric hose

MONOMAX - Injection hose system – Applications, properties, benefits

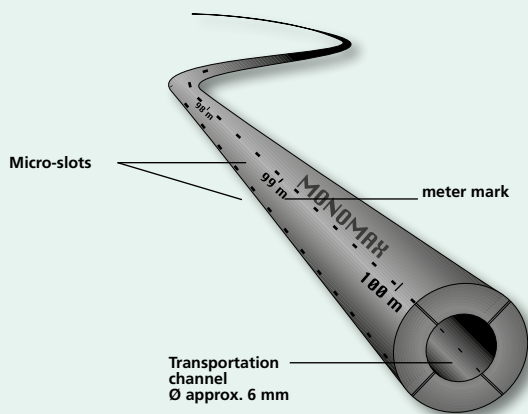
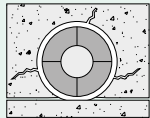
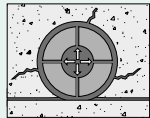


Fig. 1



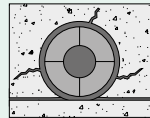
Installed situation

Fig. 2



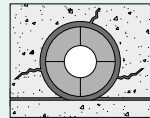
During Injection

Fig. 3

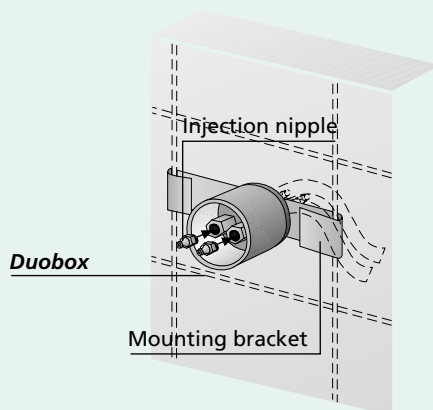


Injected joint

Fig. 4



Flushed system



Application

Waterproofing and non-positive connection of construction joints

MONOMAX injection hose for injecting

- PUR resin (entspricht P-Pur im ABP)
- Microcement (ultra-fine cement)
- PUR foam
- Epoxyd resin

Allows multiple injection, e.g. with ultra-fine cement and acrylate gel, subject to thorough flushing of the transportation channel after each injection.

Features

- Very flexible and easy to lay
- Resists penetration by foreign substances

Construction

- Foamed plastic injection hose
- Orifices in the form of micro-slots evenly distributed around the circumference

Connecting

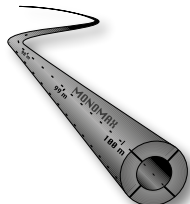
- *Duobox*; for connecting two hoses; standard depth for concrete cover 30 mm, other depths on request
- *Nailed fitting*
Hose end box (for ready-made hose with *Quicky* and fabric-reinforced PVC hose)

Hose mounting

- *Stecki* plastic fastener
- *MONOMAX* hose clamps with cap-head bolts/hammer screws

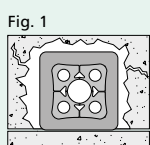
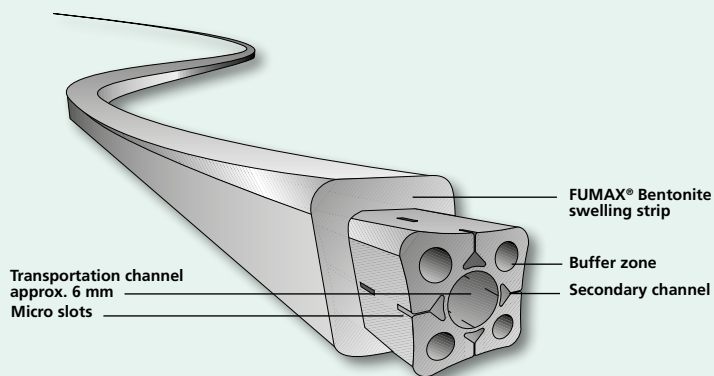
MONOMAX - Injection hose system

General German building authority test certificate

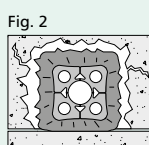


Item No.	Designation	Packing unit	Weight kg/unit
86100040	MONOMAX injection hose system, not ready-made	100 m/roll	0.105/m
86506055	Quicky hose connector	1 piece	0.005/piece
86200308	PVC hose, fabric-reinforced, red	50 m/roll	0.200/m
86200310	PVC hose, fabric-reinforced, white	50 m/roll	0.200/m
86200340	Plug	25 pieces	0.100/unit
86300180	Hose clip	25 pieces	0.006/piece
86300190	Injection nipple 55 mm	50 pieces	0.008/piece
86300050	Nailed fitting	50 pieces	0.013/piece
86300218	Taper nipple for nailed fitting and Duobox	50 pieces	0.003/piece
86300480	Duobox 30 mm	1 piece	0.070/piece
86300490	Duobox various dimensions	1 piece	
86300410	Hose end box	1 piece	0.140/piece
86312240	Carrying hose clip	100 pieces	0.340/100 pcs.
86300227	Stecki, black	100 pieces	0.002/piece
86312229	Hose clamp with cap-head bolts	100 pieces	0.017/piece
86312230	Hose clamp without bolts	100 pieces	0.014/piece
86300223	Stone drill 5 mm	1 piece	0.040/piece
86300220	Hammer screw 5 mm	200 pieces	0.320/100 pcs.

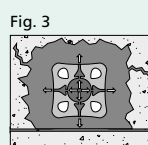
P400 - Injection hose system – Applications, properties, benefits



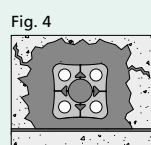
Installed situation



During swelling



During injection



Injected joint

Application

Waterproofing construction joints *P400* injection hose encased in bentonite, which swells on contact with water

injection hose for injecting

- PUR resin
- PUR foam
- Epoxy resin

Features

- Swells on contact with water
- Initially no injection required as a general rule
- Can be activated by filling hose with water
- Resists penetration by foreign substances
- Full surface contact
- Ready-made in 5 m lengths

Sheath construction

- Sheath of swelling bentonite (based on natural clay) fully surrounding the hose

Injection hose construction

- Plasticized PVC injection hose with multiple functional features
- Internal transportation channel surrounded by four secondary channels
- Orifices in the form of micro-slots in linear arrangement with buffer zones to facilitate valve function

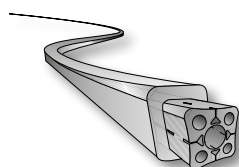
Connecting

- *Duobox* – for connecting two hose ends; standard depth for concrete cover 30 mm
- *Nailed fitting*
- *Hose end box*

Hose mounting

- *Betoquell* levelling paste for gluing and levelling
- *FUMAX*® contact adhesive
- *BETOFIX* for gluing

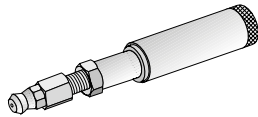
P400 - Injection hose system Inspection report



Item No.	Designation	Packing unit	Weight kg/unit
86500400	injection hose system, ready-made 5 m length	roll 5 x 5 m	0.920/m
86506055	Quickly hose connector	25 pieces	0.005/piece
86506060	Quickly hose connector, ready-made	1 piece	0.105/piece
86200308	PVC hose, fabric-reinforced, red	50 m	0.200/m
86200310	PVC hose, fabric-reinforced, white	50 m	0.200/m
86200340	Plug, yellow	25 pieces	0.100/unit
86300190	Injection nipple 55 mm	50 pieces	0.008/piece
86300180	Hose clip	25 pieces	0.006/piece
86300480	Duobox 30 mm	1 piece	0.070/piece
86300490	Duobox, various dimensions	1 piece	0.105/piece
86300410	Hose end box	1 piece	0.140/piece
86300050	Nailed fitting	50 pieces	0.013/piece
86340012	Hose clamp w/o bolts P400	100 pieces	0.026/piece
86300223	Stone drill 5 mm	1 piece	0.040/piece
86300220	Hammer screw 5 mm	200 pieces	0.320/100 pcs.
86430030	FUMAX® contact adhesive 300 ml	cartridge	0.520/piece
86431014	Betoquell levelling paste 310 ml	cartridge	0.460/piece
86430052	Betofix glue 600 ml tube with nozzle	tube	0.920/piece
86430060	Gun for tube	piece	1.020/piece

Hole injector

For sealing cracks in buildings.
The tension can be increased
while the material is being injected.

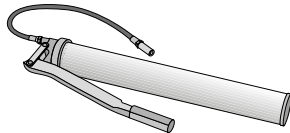


Item No.	Designation	Hole Ø in mm	Length in mm	Packing unit pieces/box	Weight kg/piece
87800075	Hole injector	14	75	100	0.025
87800110	Hole injector	14	110	100	0.034

Single-use injector delivery times and prices on request.
Other dimensions available on request.

Injection tools

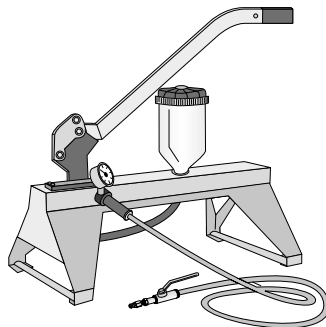
For injecting media in
hoses and hole injectors.



Lever hand gun

Item No.	Designation	Packing unit piece	Weight kg/piece
88002000	Lever hand gun	1	1.200
88002100	Reinforced hose & hydraulic head	1	0.120
88002110	Nose piece for reinforced hose	1	0.020

Operating pressure up to 80 bar
Delivery rate max. 2 cm³ / stroke
Injection media capacity 1,000 ml

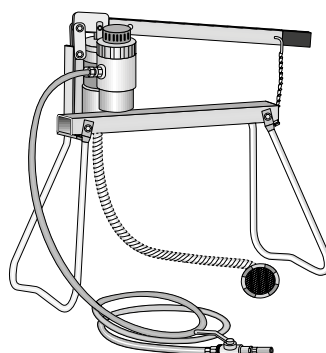


User-friendly bench-type
lever press

88003000	Bench-type lever press	1	14.000
88004000	User-friendly lever hand gun for injecting cement	1	15.750
88002140	Reinforced hose & hydraulic head	1	0.400

Operating pressure max. 0-160 bar
Delivery rate max. 16 cm³ / stroke

Dimensions in cm
(height/width/length): 75/40/45

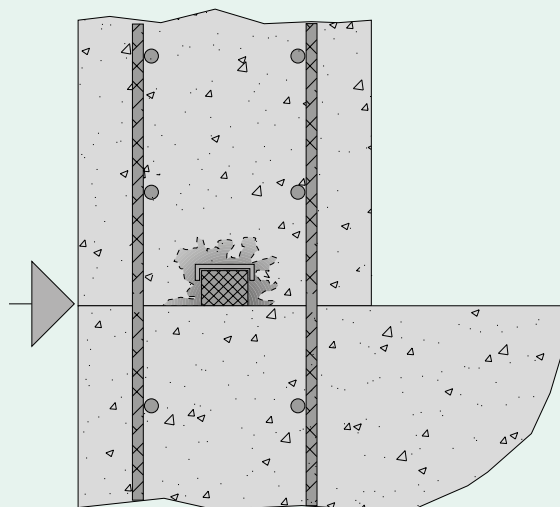


User-friendly bench-type lever press
for cement-Injection

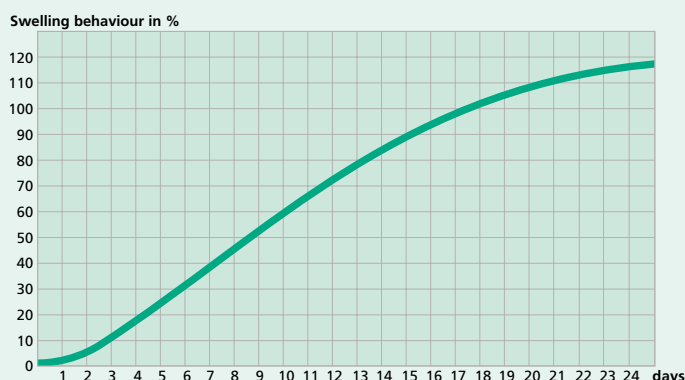
Injection material on request

- PUR resin (corresponds to P-PUR in the test certificate)
- Microcement (ultra-fine cement)
- PUR cleaner

FUMAX® Type S – Applications, properties, benefits



Swelling behaviour FUMAX® Type S:



Application

Waterproofing horizontal and vertical construction joints

Features

- Natural bentonite swelling strip produced from calcium bentonite
- Swells on contact with water
- Sealing effect created by exertion of pressure as volume increases
- Almost immediate activation

Laying / fixing

- Fixing rails with clamps and cap-head bolts/hammer screws
- Fixing lattice with discs and pins
- Glued with contact adhesive or *BETOFIX*
- On uneven surfaces with *Betoquell* levelling paste

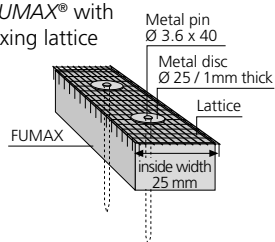
Notes on installation

- The laying surface must be flat, dry and free from dirt, grease, oil and loose particles
- *FUMAX*® is laid in the centre of the construction joint (min. spacing 8 cm).
- The ends of the strips must meet without overlapping
- Attach fixing rail and fasten with clamp and cap-head bolts or hammer screws; clamp spacing 15 mm acc. to DBV
- Alternatively, locate fixing lattice and attach the disc with a pin
- *Betoquell* for levelling uneven surfaces

FUMAX® Type S

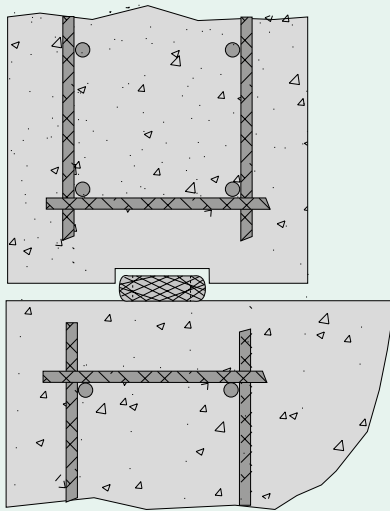
*General German building authority test certificate

FUMAX® with fixing lattice



Item No.	Designation	Packing unit	Weight kg/unit
86419025	FUMAX® Type S 18 x 23 mm	8 x 5 m/box 18 boxes/pallet	0.680/m
86411000	Fixing lattice	40 x 1 m/bundle	0.040/m
86430015	FUMAX® Discs with pins	100 pieces	1.260/100 pieces
86300223	Stone drill 5 mm	1 piece	0.040/piece
86430000	FUMAX® clamp	200 piece	1.830/100 piece
86300220	Hammer screw 5 x 35mm	200 pieces	0.320/100 pieces
86431014	Betoquell levelling paste 310 ml	cartridge	0.460/piece
86430030	FUMAX® contact adhesive 300 ml	cartridge	0.520/piece
86430052	Betofix glue 600 ml tube with nozzle	tube	0.920/piece
86430060	Gun for tube	piece	1.020/piece

FUMAX® Type G1 – Applications, properties, benefits



Application

Waterproofing horizontal and vertical construction joints

Features

- FUMAX® Type G1 is an elastic strip made from polyolefin rubber and resin that swells on contact with water
- Swells on contact with water
- Sealing effect created by exertion of pressure as volume increases
- Delayed activation
- Drying of strip reverses swelling
- Can be used in initially saturated areas
- Outstanding mechanical properties of swollen strip
- Very good chemical resistance
- Highly suitable for precast concrete parts
- Suitable for joints in cast-in-place and precast concrete parts

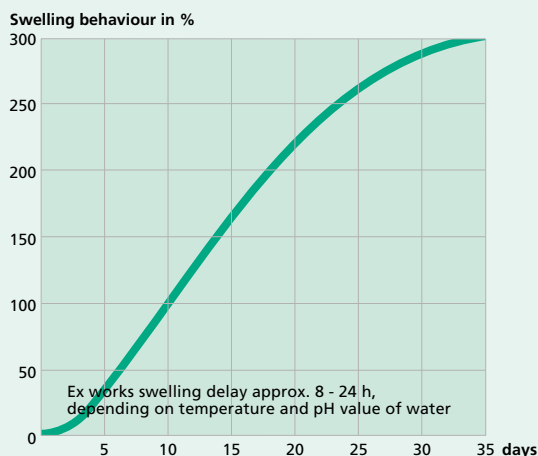
Laying / fixing

- Discs and pins
- Glued with *Betofix*
- On uneven surfaces with *Betoquell* levelling paste

Notes on installation

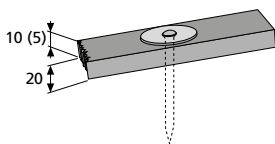
- The laying surface must be flat and free from dirt, grease, oil, loose particles and standing water
- FUMAX® is laid in the centre of the construction joint (min. spacing 8 cm).
- The ends of the strips must meet without overlapping
- Attach with discs and pins
- Pin spacing 15 cm acc. to DBV
- *Betoquell* for levelling uneven surfaces
- *Betofix* for gluing

Swelling behaviour FUMAX® Typ G1 :



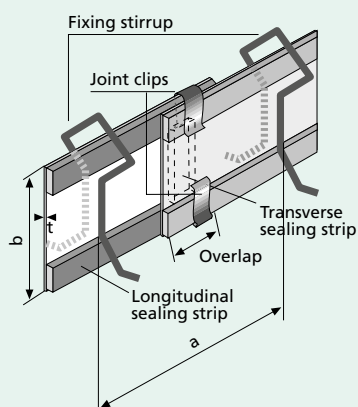
FUMAX® Type G1

*General German building authority test certificate



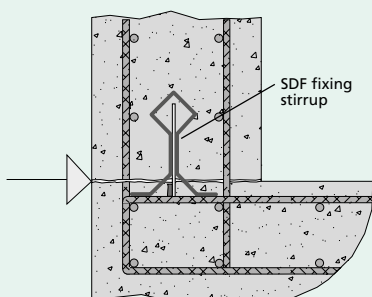
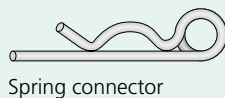
Item No.	Designation	Packing unit	Weight kg/unit
87201022	FUMAX® Type G1 green 10 x 20 mm*	8 x 10 m/box	0.276/m
87200522	FUMAX® Type G1 type 5 x 20 mm	10 x 15 m/box	0.145/m
86300223	Stone drill 5 mm	1 piece	0.040/piece
86300220	Hammer screw 5 x 35 mm	200 pieces	0.320/100 pieces
86430010	Cap-head bolt 40 mm	100 pieces	0.420/100 pieces
86430015	FUMAX® Discs with pins	100 pieces	1.260/100 pieces
86431014	Betoquell levelling paste 310 ml	cartridge	0.460/piece
86430052	Betofix glue 600 ml tube with nozzle	tube	0.920/piece
86430060	Gun for tube	piece	1.020/piece

SDF strip Q1/Q2 – Applications, properties, benefits

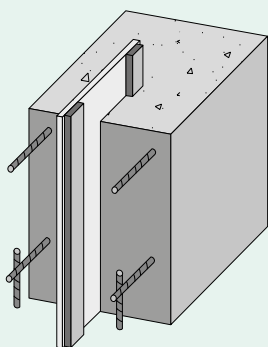


Dimensions

SDF/Q1-Q2 strip (strips/rolls)
Length L = 2.00 m run /
20.00 m run
Width b = 150 mm
Thickness t = 0.85 mm



Footing-to-wall joint



Wall-to-wall joint

Application

Waterproofing construction joints (no upstands required).

Features

- Self-sealing water barrier available in strips or on rolls
- Coated with butyl-based, adhesive vulcanized rubber profile. Swelling strip to be located on one side of joint on one or both longitudinal sides and, to seal the overlap, on one end.
- Swelling strip swells automatically in case of water ingress; very good chemical resistance
- *SDF strip* highly suitable for precast concrete construction as well

Construction

- Strip with adhesive swelling material on one side
- *SDF Q1* with swelling strip on one longitudinal side, typically for use in footing-to-wall joints
- *SDF Q2* with swelling strip on both longitudinal sides, typically for use in wall-to-wall joints
- Both *SDF* types with swelling strip on one end face for sealing overlaps

Laying / fixing

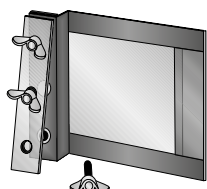
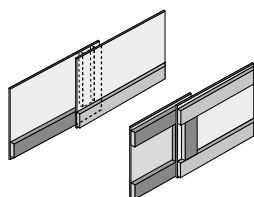
Footing-to-wall joint

- Place the self-sealing water barrier (*SDF Q1* or *Q2*) on the top reinforcement. The swelling strip must face down and be fully integrated in the first concreting section.
- Bend and break water barrier at the corner as necessary
- Secure against tipping and slipping with fixing stirrups (spacing $a_{\min} = 1.0$ m) fastened to the reinforcement.
- Join overlapping ends with joint clips

Wall-to-wall joint

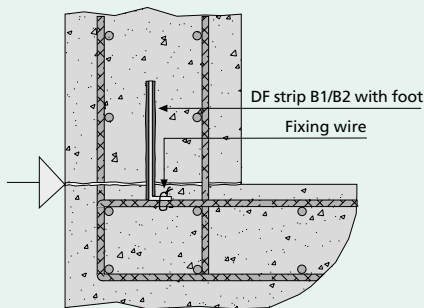
- Integrate *SDF Q2* water barrier equally in both wall and concreting sections

SDF strip Q1/Q2 General German building authority test certificate



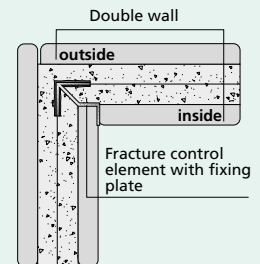
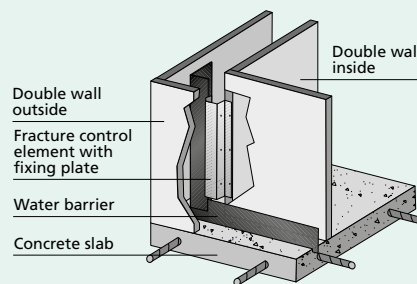
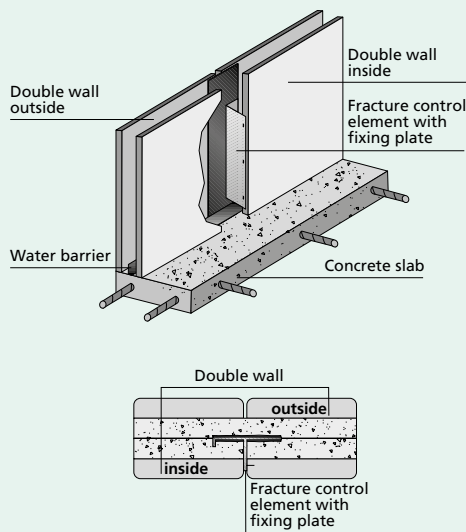
Item No.	Designation	Packing unit	Weight kg/unit
87401200	SDF strip Q1 strips	2 m/50 m bundle	0.870/m
87402240	SDF strip Q2 strips	2 m/50 m bundle	1.020/m
87402508	SDF strip Q1 roll	20 m/roll	0.943/m
87600011	SDF fixing stirrup	100 pieces	0.082/piece
87600020	Joint clip	100 pieces	0.007/piece
44390162	Spring connector, galvanized	1 piece	0.016/piece
87600025	Swelling strip keeper	1 piece	0.720/piece

DF strip B1/B2 – Applications, properties, benefits



Benefits

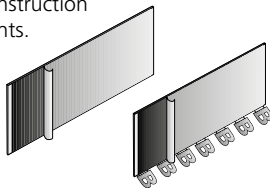
- Special bituminous coating of entire surface
- Reliable and quick waterproofing of all construction joints with continuous reinforcement
- No need for complex concrete upstands
- *DF strip B1/B2 with foot* (B-shaped, standing vertical) for high stability and easy fastening
- Minimum embedding depth of strip in concrete ≥ 3 cm
- Strip joints fastened with joint clips
- Minimum overlap of strip joints ≥ 10 cm
- No corner elements required because strips can be bent back and adapted without any tools
- Coating resistant to many types of organic foul water
- Suitable for installation in sewage and drinking water plants
- Coating ideally protected by two-part siliconized foil



DF strip B1/B2

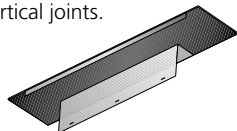
*General German building authority test certificate

DF water barriers have a special bituminous coating for waterproofing horizontal and vertical construction joints.



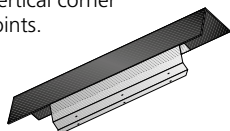
Item No.	Designation	Packing unit	Weight kg/unit
87401150	DF strip B1 (coated one side) 150 x 2000 mm	100 m/box	0.980/m
87402150	DF strip B2* (coated both side) 150 x 2000 mm	100 m/box	1.150/m
87402250	DF strip B2 roll* (coated both side) 20 m	20 m/roll	0.880/m
87600011	Fixing stirrup	100 pieces	0.082/piece
87600020	Joint clip	100 pieces	0.007/piece
44390162	Spring connector, galvanized	1 piece	0,016/piece
87401160	DF strip B1 with foot (coated one side) 150 x 2000 mm	100 m/box	1.000/m
87402160	DF strip B2 with foot* (coated both side) 150 x 2000 mm	100 m/box	1.250/m

DF water barrier with fixing plate for double wall vertical joints.



87402180	DF crack control element B2 straight Element length 2.50 m	linear meter	1.540/m
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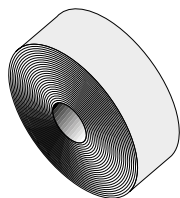
DF water barrier with fixing plate for double wall vertical corner joints.



87402200	DF crack control element B2 corner Element length 2.50 m	linear meter	1.680/m
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Water barrier

Ungalvanized strip for water-proofing horizontal and vertical construction joints.



Spring connector

Item No.	Designation	Packing unit	Weight kg/unit
87507190	Water barrier, width 200 mm / 1.0 mm	30 lin. m/roll	1.570/m
87507250	Water barrier, width 250 mm / 1.0 mm	30 lin. m/roll	1.963/m
87507300	Water barrier, width 300 mm / 1.0 mm	30 lin. m/roll	2.355/m
87507170	Water barrier, width 200 mm / 1.5 mm	30 lin. m/roll	2.476/m
87507180	Water barrier, width 300 mm / 1.5 mm	30 lin. m/roll	3.667/m
87507200	Water barrier, width 300 mm / 2.0 mm	30 lin. m/roll	4.760/m
Other variants available on request.			
86430052	Betofix glue 600 ml	1 tube	0.920/piece
86430060	Glue gun for tube	1 piece	1.020/piece
86431014	Betoquell levelling paste 310 ml	1 cartridge	0.460/piece
44390162	Spring connector, galvanized	1 piece	0.016/piece

Betofix and *Betoquell* for gluing seam-sheet joints.

High-quality raw materials and modern production sites constitute the guarantor for the technical competence of our products. For five decades, BETOMAX® *systems* has been working to the 'Made in Germany' concept of quality. Be it rationally manufactured series products or tailor-made individual solutions: BETOMAX® *systems* delivers a complete range of intelligent products and solutions for structural concrete work and civil engineering.

Anchoring technology

Tubular spreader technology

Reinforcement technology

Bridge building technology

Safety technology

Construction joint technology

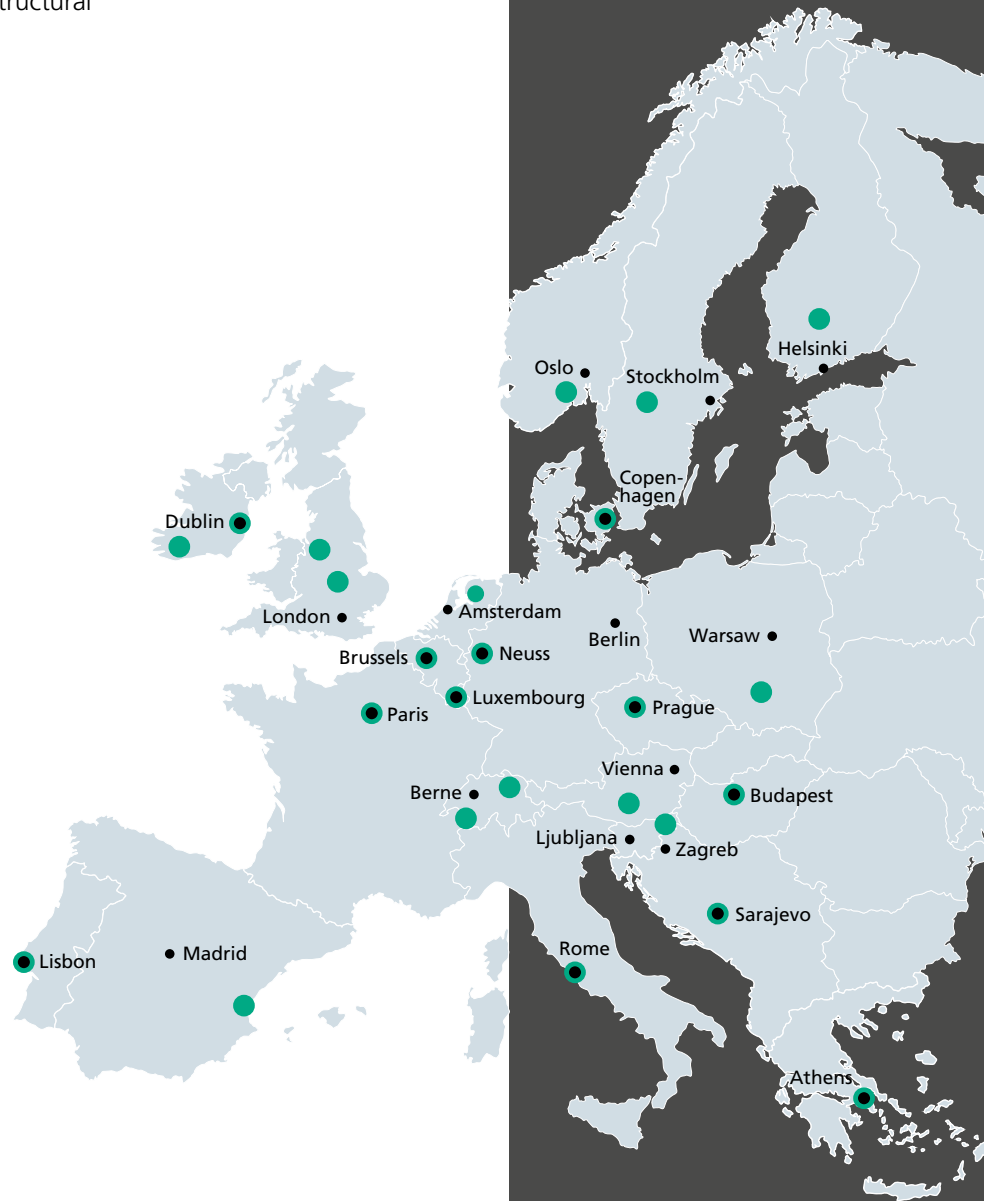
Shuttering system technology

Building materials technology

Spacer technology

Work aids

When it matters...

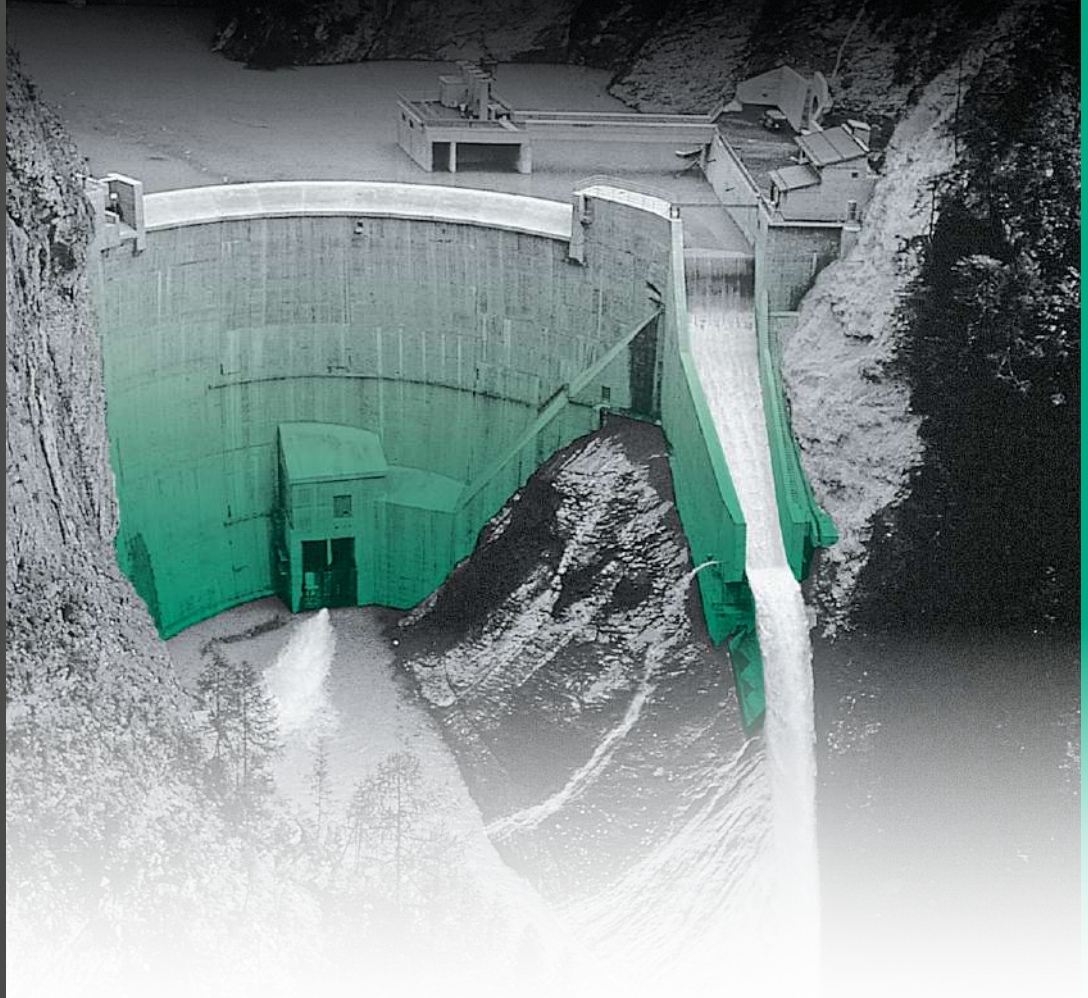


systems
BETOMAX®

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E-Mail export@betomax.de
www.betomax.de

Subject to technical change. 03 / 2019





Formwork liner

Recess former

Shuttering

Shuttering aids

Accessories



When it matters...

BETOMAX[®]
systems
GmbH & Co. KG

FORMTEX® – Applications, properties, benefits

The lifetime of any concrete structure depends on the ability of the concrete cover to resist the aggressive elements that can attack the reinforcement and thus damage the supporting structure.

A dense, strong and uniform concrete surface prevents the penetration of mineral salts, oxygen, moisture and carbon dioxide, thereby greatly extending the life of the structure. **FORMTEX®** from **BETOMAX® systems** ensures a longer lifetime for concrete structures cast in aggressive environments.

The **FORMTEX®** liner is a non-woven fabric made from polypropylene fibres needled together in a non-structured order. The fabric is thermally bonded on one side to create a filter, while the non-thermally bonded side functions as a drainage layer. The pore size of the filter is designed so that cement particles are retained, while water passes through.

Draining water off the concrete surface reduces the water/cement (w/c) ratio and thus substantially improves the strength and durability of the concrete.

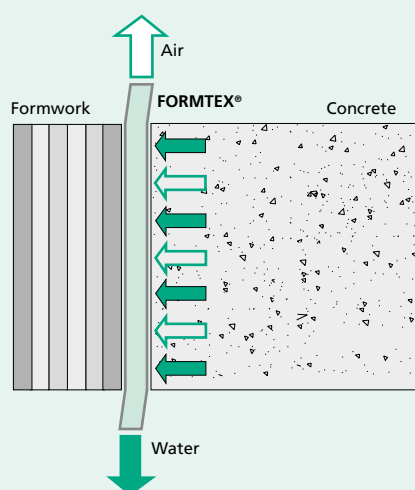
Eliminating air from the concrete results in a surface that is practically free from blow-holes. Besides improving the concrete quality, it makes

the visible concrete surfaces more attractive as well. Different colour hues can be produced.

The **BETOMAX®** formwork liner can be used in hydraulic engineering and tank construction; road and bridge building; tunnel construction and wherever concrete surfaces are exposed to severe stresses, and the lifetime of structures is to be prolonged.

It is also suitable for in-situ and precast building components if air cannot be readily eliminated from the concrete because of the structure's shape (e.g. in the case of slanted parts and the associated undercutting of the formwork).

- **FORMTEX®** formwork liner has been tested and, if handled properly, can be used twice
- The smooth side always faces the concrete, and the "fleece" side faces the formwork
- Do not use release agents
- For best results with **FORMTEX®**, make sure that the fresh concrete is poured and compacted carefully



Benefits of FORMTEX® for the client

- Prolonged lifetime and minimized maintenance costs
- Greater wear resistance
- Enhanced resistance to chemical attack
- Improved corrosion protection for rebars
- Very good surface adhesive tensile strength
- Proven not to pollute potable water

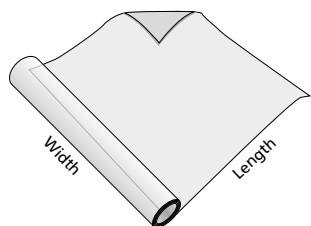
Benefits of FORMTEX® for the contractor

- Easy and simple to cut
- Flexible and easy to lay over edges
- High tear strength, suitable for clamping
- Can be attached to formwork facing with very few tacks
- Special contact adhesive can be applied to entire surface for fixing
- Suitable for reuse with very little effort
- Versatility of material makes it suitable for all types of shuttering
- Compatible with steel, plastic or timber formwork
- No form oil or release agent required

FORMTEX®

FORMTEX® from **BETOMAX® systems** ensures a longer lifetime for concrete structures cast in aggressive environments.

The **FORMTEX®** liner is a bonded fibre fabric that drains surplus water and air from the surface of freshly cast concrete.



Item No.	Designation	Width m	Length m / m ²	Packing unit	Weight kg/roll
29050125	FORMTEX® liner	B 1.25	50 / 62.5	roll	15.630
29050275	FORMTEX® liner	B 2.75	50 / 137.5	roll	34.380
29050320	FORMTEX® liner	B 3.20	50 / 160	roll	40.000
29050400	FORMTEX® liner	B 4.00	50 / 200	roll	50.000

FORMTEX® liner – delivery times and dimensions available on request.

29200100	FORMTEX® spanner	piece	3.600/pc.
29200350	FORMTEX® hook	piece	0.047/pc.
29200500	FORMTEX® stapler	piece	0.310/pc.
29200520	FORMTEX® staples (6 mm)	5000 piece	0.001/pc.
29200530	FORMTEX® staples (8 mm)	5000 piece	0.001/pc.
29200550	FORMTEX® cutter	piece	0.082/pc.
29200400	FORMTEX® glue (spray gun 500 ml)	piece	0.425/pc.
29200440	FORMTEX® adhesive emulsion (20 kg drum)	piece	21.000/pc.
29200420	FORMTEX® cleaner (spray gun 500 ml)	piece	0.505/pc.
29200430	FORMTEX® cleaner (5 L can)	piece	4.700/pc.
70619600	oam adhesive tape 16 mm x 6 mm	18 à 10 m	0.083/pc.

Please ask for our current accessory hire prices.

FORMTEX® – Tensioning application

Tools

- Cutter, stapler, staples, FORMTEX® tensioning device and hook

Man-hour requirement

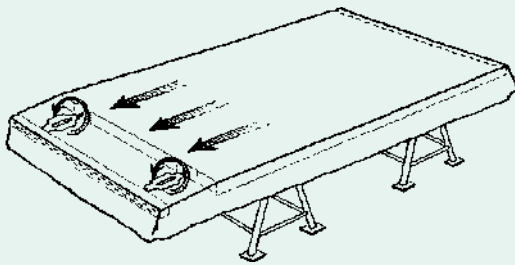
- Approx. 5 - 10 min. per m²
- Depending on the size of the formwork elements (the larger the elements, the less time required per m²)
- Using the covered formwork twice significantly reduces the forenamed times

Formwork

- Mainly for use with plywood formwork (e.g. proprietary frame formwork)
- Make sure that formwork is clean and free from release agents

Second use

- FORMTEX® has been tested and verified suitable for using twice
- Before the second use, make sure that the fabric is not damaged or creased and is free from loose or residual concrete attached to the surface (brush off and make taut again if necessary)



Calculation of FORMTEX® roll size for tensioning method

- Minimum roll length (insert value in m)
 $(h + 0.5 \text{ m}) \times \text{No. of formwork elements}$
- Minimum roll width (insert value in m) $b + 0.4 \text{ m}$
h and b = height and width of one formwork element as illustrated alongside

Typical calculation

For concreting a wall measuring 4 x 20 m with FORMTEX® formwork liner on one side.

The formwork is to comprise a total of 10 elements, each measuring 4 x 2 m.

- Standard roll size
Length $(4 \text{ m} + 0.5 \text{ m}) \times 10 \text{ elements} = 45.0 \text{ m}$
Width $(2 \text{ m} + 0.4 \text{ m}) = 2.4 \text{ m}$
- Required roll size: 2.75 x 50 m

FORMTEX® – Gluing application

Tools

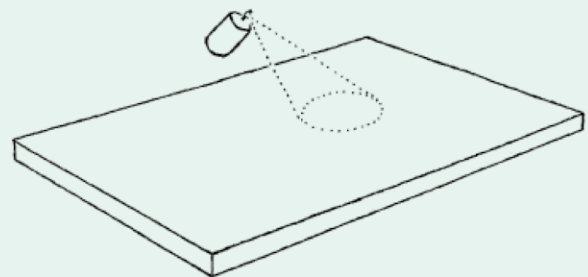
- Cutter, FORMTEX® glue and cleaner

Formwork

- Primarily for steel formwork (not suitable for tacking on the fabric)
- Joint, compensation and corner elements
- Mainly for joint elements and curved surfaces that do not allow tensioning of fabric
- Surface must be clean and free of grease

Second use

- FORMTEX® can be used a second time provided that the fabric remains on the formwork
- The fabric must not be damaged, and loose or residual concrete attached to the surface must be removed (brush off if necessary)

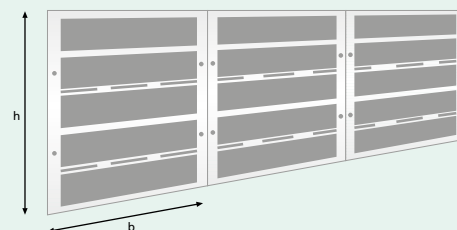


Calculation of FORMTEX® roll size for gluing method

When gluing, allow 5 cm of fabric to overhang on all sides.

Therefore

- Minimum roll length
 $h + 2 \text{ times } 5 \text{ cm} = h + 10 \text{ cm} \times \text{No. of formwork elements}$
- Minimum roll width
 $b + 2 \text{ times } 5 \text{ cm} = b + 10 \text{ cm}$



FORMTEX® / FORMTEX® - SK	unit	average
Pore size	µm*	< 30
Air permeability	l / m ² / s	250
Hydraulic permeability	l / m ² / s	10
Water holding capacity	l / m ²	1
Tear resistance machine direction	N	200
Tear resistance transverse direction	N	185
Thickness at 2 kPa	mm	1,2
Thickness at 200 kPa	mm	0,8
Weight	g / m ²	250 / 275
Ingredients	100 % polypropylene	

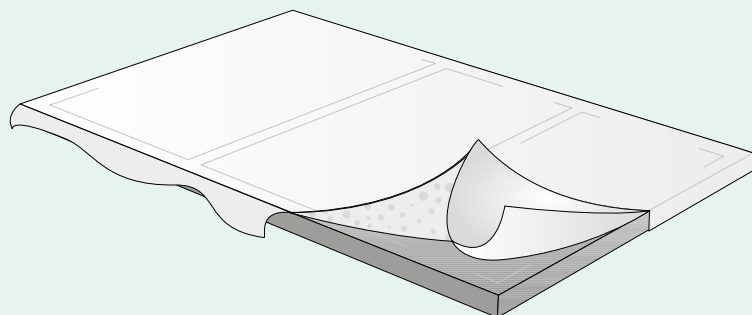
* 1 µm = 1/1000 mm

All values shown are reference values and correspond to the average test results of our laboratories. Subject to modifications at any time without notification.

Environment

Due to the application of FORMTEX® neither the use of mould oil nor release agent is required any more. Further, no additional coating or any other follow-up treatment of concrete is necessary, owing to the achieved surface quality. FORMTEX® can be treated as house waste. While burning FORMTEX® above 600 °C only CO, CO₂ and water is formed.

FORMTEX® - SK – self adhesive application



Tools

- Cutter, FORMTEX® cleaner, steel wool

Formwork

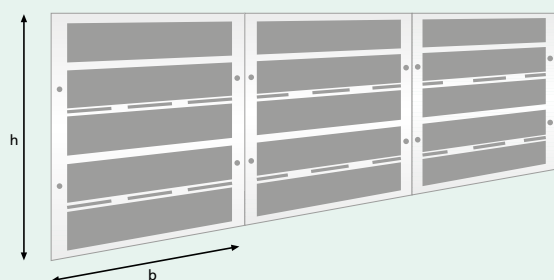
- Mainly for steel formwork without the possibility of tensioning and tacking the fleece.
- Wooden formwork, which had no contact with mould oil as well as formwork made of planed, smooth wood.
- Ideally suited for joint elements, convex surfaces and small, time-consuming formwork.
- The surface must be clean, fat- and oil free.

Second use

- FORMTEX® - SK can be used twice as long as the fleece remains on the formwork.
- The fleece must be undamaged and cleaned superficially to remove remaining concrete (sweep off where appropriate).
- Pay attention to colour changes. Don't use the fleece again, if the drainage layer is clogged up with cement slurry.

Processing guidelines

FORMTEX®-SK can be used at temperatures of more than +10° C



Calculation of the required FORMTEX®-SK roll size for the self adhesive application

Each side of the fleece only requires an overlap of 5 cm when using the self adhesive application.

As a result

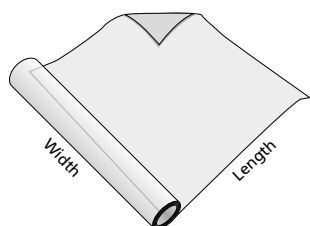
- for the minimum roll length
 $h + 2 \text{ times } 5 \text{ cm} = h + 10 \text{ cm} \times \text{number of formwork elements}$
- for the minimum roll width
 $b + 2 \text{ times } 5 \text{ cm} = b + 10 \text{ cm}$

FORMTEX®-SK

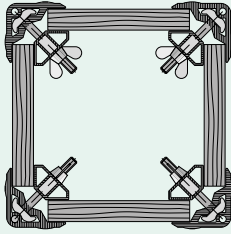
FORMTEX® - SK formwork liner is mainly used for the optimization of technical concrete characteristics.

FORMTEX® - SK formwork liner is a fibre fleece made from polypropylene fibres, which is used to drain-off excess water and air from the fresh concrete's surface.

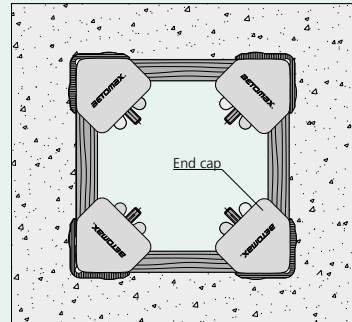
Item No.	Designation	Width m	Length m / m ²	Packing unit	Weight kg/roll
29060070	FORMTEX®-SK self adhesive liner B 0.70		50 / 35	roll	9.630
29060130	FORMTEX®-SK self adhesive liner B 1.30		50 / 65	roll	17.880
29060200	FORMTEX®-SK self adhesive liner B 2.00		50 / 100	roll	27.500
29200420	FORMTEX® cleaner (spray gun 500 ml)			piece	0.505/pc.
29200430	FORMTEX® cleaner (5 L can)			piece	4.700/pc.
29200550	FORMTEX® cutter			piece	0.082/pc.



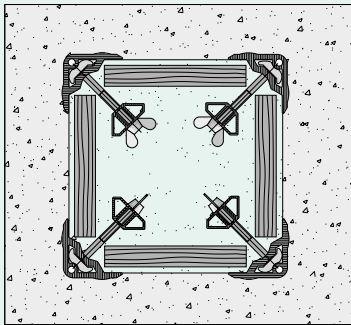
CORNER® – reusable shuttering corner



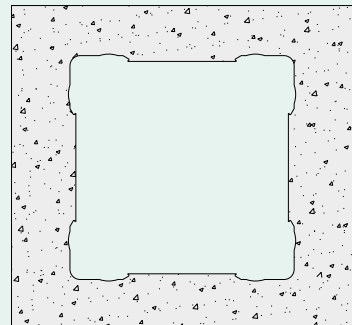
1. Assemble the blockout with ready-made CORNER® strips



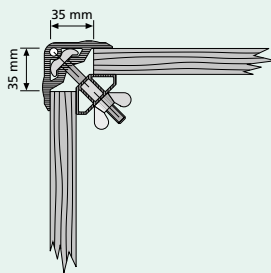
2. Pour concrete



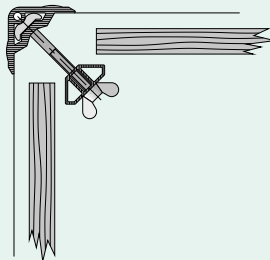
3. Remove the CORNER® shuttering



4. Finished blockout



Shuttering inside corner with BETOMAX® CORNER®

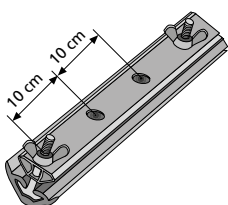


Shuttering removal is easy once the locking strip is released

Multi-purpose, strong connecting element for shuttering corners

- Reusable shuttering corner
- Strong connector for shuttering corners and many other uses
- Cap prevents concrete intrusion
- Easy-to-clean plastic

CORNER®



Item No.

Designation

Packing unit

Weight kg/unit

30606110

CORNER® plastic outside

2 m

0.872/m

30606120

CORNER® plastic inside

2 m

0.395/m

30611000

Cut lengths

lfd. meter

1.265/m

30622010

CORNER® plastic bolt

100 piece

0.011/pc.

30622020

Wing nut CORNER® galvanized

100 piece

0.033/pc.

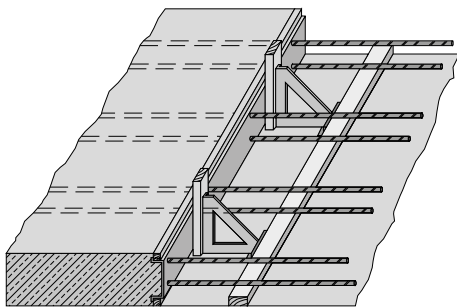
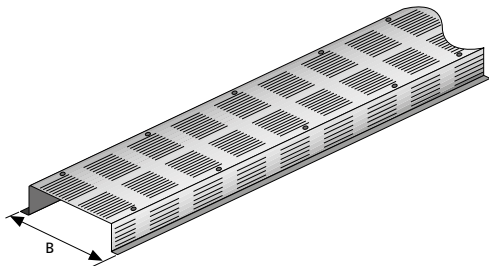
30632000

Cap CORNER®

100 piece

0.006/pc.

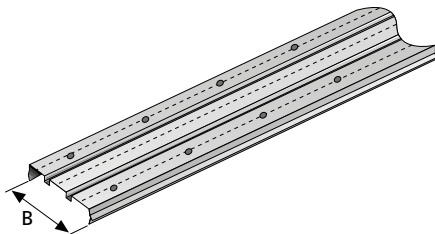
COMAX® - Shuttering strip P



Item No.	Designation	Width B mm	Packing unit	Weight kg/lin. m
42060000	Shuttering strip P	60	lin. m	0.639
42080000	Shuttering strip P	80	lin. m	0.720
42110000	Shuttering strip P	110	lin. m	0.879
42140000	Shuttering strip P	140	lin. m	1.056
42160000	Shuttering strip P	160	lin. m	1.200
42190000	Shuttering strip P	190	lin. m	1.420
42220000	Shuttering strip P	220	lin. m	1.630
42240000	Shuttering strip P	240	lin. m	1.630

- COMAX® shuttering strip P is KOMO certified
- Outstanding compatibility ensured by profiling and perforation
- Standard lengths of 0.83, 1.25 and 2.50 m
- Other lengths on request
- Various hole diameters and spacings available
- No removal of or partial chiselling away from shuttering
- Perforation free of charge with standard lengths

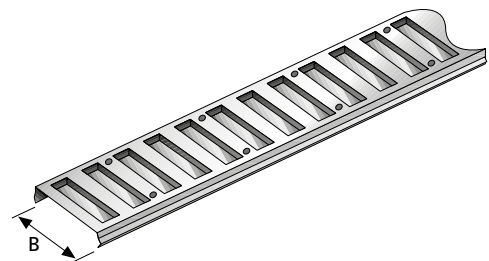
COMAX® - Shuttering strip Q



Item No.	Designation	Width B mm	Packing unit	Weight kg/lin. m
57110000	Shuttering strip Q	110	lin. m	0.856
57140000	Shuttering strip Q	140	lin. m	1.024
57160000	Shuttering strip Q	160	lin. m	1.128
57190000	Shuttering strip Q	190	lin. m	1.236
57220000	Shuttering strip Q	220	lin. m	1.324
57240000	Shuttering strip Q	240	lin. m	1.368

- The COMAX® shuttering strip Q is classed as „TOOTHED“ in accordance with EC2
- COMAX® shuttering strip Q is KOMO certified
- Standard lengths of 1.25 m
- Other lengths on request
- Various hole diameters and spacings available

COMAX® - Shuttering strip L

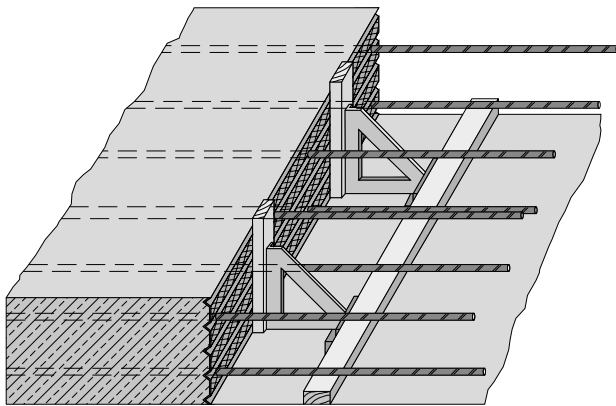
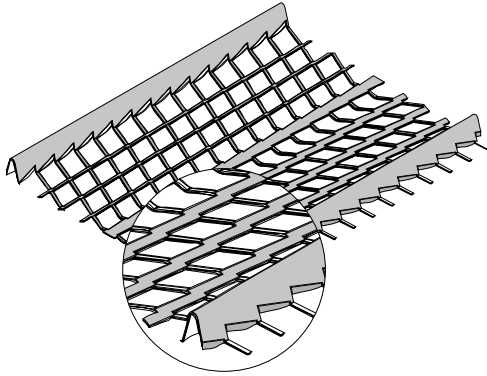


Item No.	Designation	Width B mm	Packing unit	Weight kg/lin. m
58110000	Shuttering strip L	110	lin. m	0.896
58140000	Shuttering strip L	140	lin. m	1.144
58160000	Shuttering strip L	160	lin. m	1.240
58190000	Shuttering strip L	190	lin. m	1.372
58220000	Shuttering strip L	220	lin. m	1.540
58240000	Shuttering strip L	240	lin. m	1.696

- The COMAX® shuttering strip L is classed as „TOOTHED“ in accordance with EC2
- COMAX® shuttering strip L is KOMO certified
- Standard lengths of 1.25 m
- Other lengths on request
- Various hole diameters and spacings available

STRECKMAX®

Expanded metal for permanent shuttering
Sheet size: 2.50 m x 0.60 m = 1.50 m² (0.30 - 0.50)

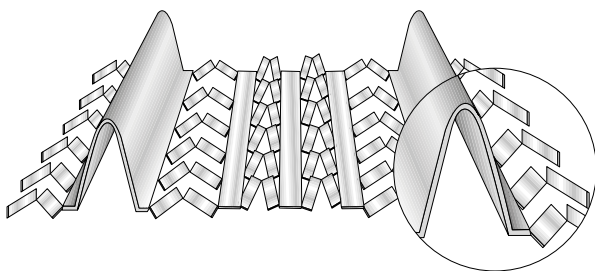


Item No.	Thickness mm	Packing unit/pallet	Weight kg/m ²
31045000	0.30	700 pcs. = 1050 m ²	1.755
31050000	0.50	500 pcs. = 750 m ²	1.950

- Wide range of applications
- Galvanized
- Rhombus pattern for strong bonding with concrete
- Compatible with BETOMAX® MONOMAX injection system for simple construction joint sealing

SUPER-STRECKMAX®

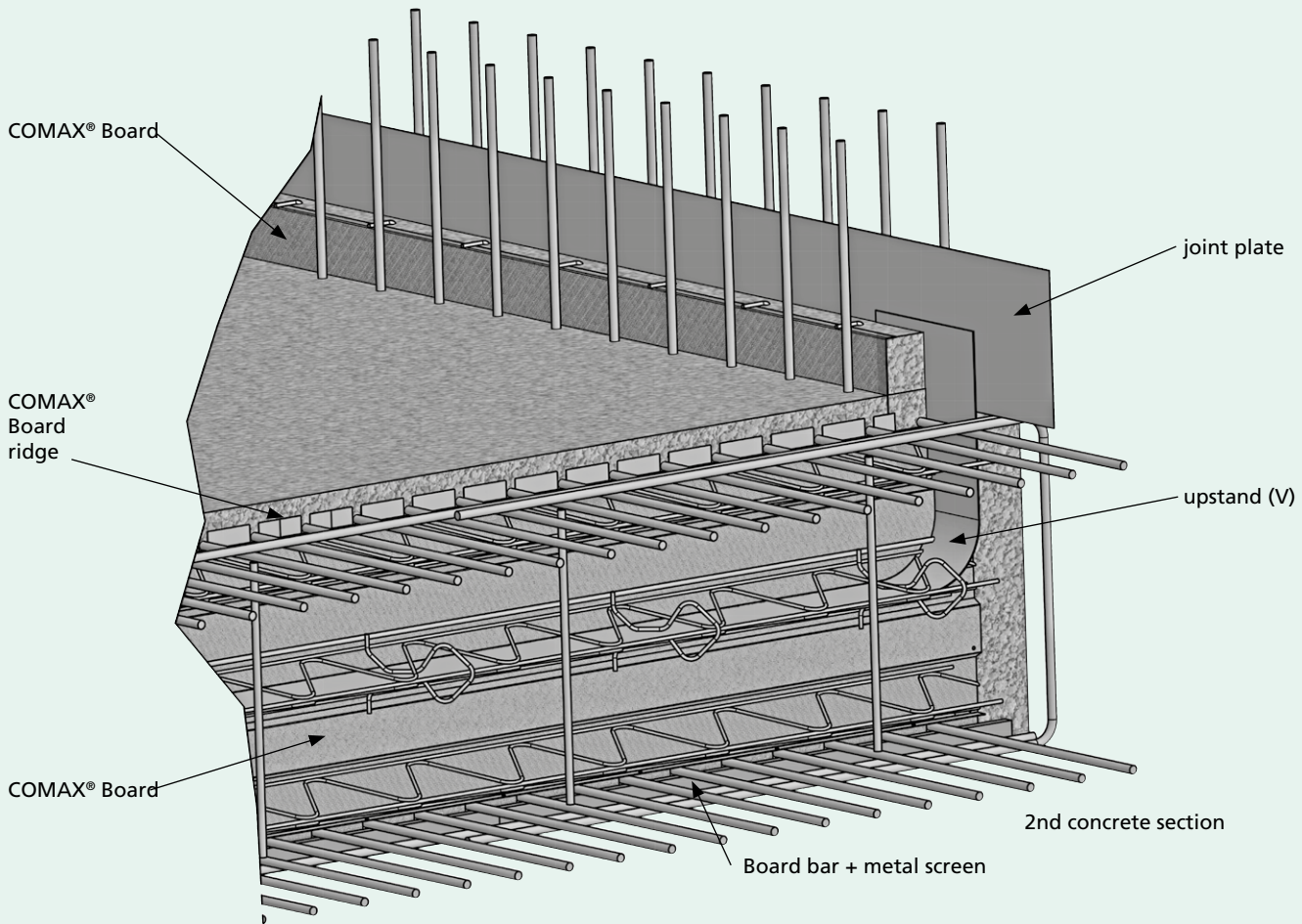
Expanded metal for permanent shuttering
Sheet size: 2.00 m x 0.445 m = 0.89 m² (0.45 - 0.575)



Item No.	Thickness mm	Packing unit/pallet	Weight kg/m ²
31040000	0.450	100 pcs. = 89 m ²	4.157
31057500	0.575	100 pcs. = 89 m ²	5.056

- Tall ribs for optimum interlocking of joints and maximum strength
- Wide range of applications
- Galvanized
- Compatible with BETOMAX® MONOMAX injection system for simple construction joint sealing

COMAX® Board – Applications, properties, benefits



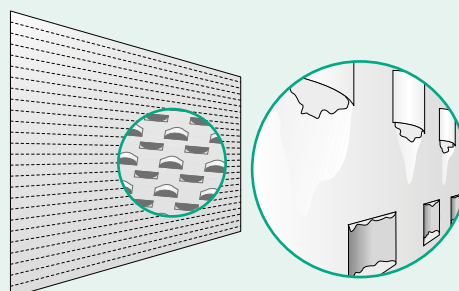
COMAX® Board – a trendsetting technology with exclusive features.

COMAX® Board is a specially perforated and ribbed sheet metal for the improved output of lost shutterings. Due to computer-optimized profiling of the sheet metal a particular diamond shaped pattern is formed, which ensures an excellent concrete bonding. Thus, COMAX® Board provides an unique combination of permeability, bond and steadiness.

- COMAX® Board disposes a particular developed perforation
- COMAX® Board offers a strongly shaped and extremely stable shuttering
- COMAX® Board guarantees perfect concrete bonding
- COMAX® Board prevents predominantly washing out of cement slurry and other super-fine components
- COMAX® Board ensures a reliable sealing due to the high number of the staggered tooth rows

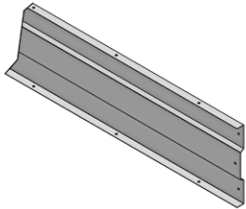
COMAX® Board – a wide range of elements and applications for every use.

COMAX® Board is used for stripping off construction or structural joints mainly at the bottom/wall area. BETOMAX® systems offers a wide range of basic elements for different areas of application. Further, an additional set of design variants are available for each basic element like toothings, folds or perforations. COMAX® Board allows the assimilation of individual joint sealings like joint plates or joint tapes. COMAX® Board shuttering systems are constructively reinforced acc. to the requirements or dimensions.

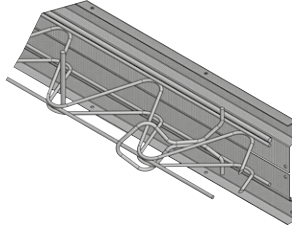


COMAX® Board – Overview

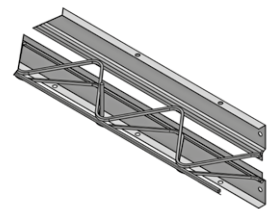
Type A
Shuttering element



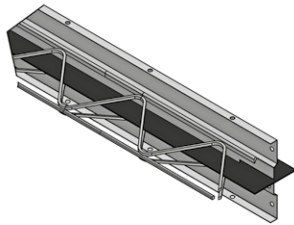
Type AFE
Shuttering element for accom-
modating joint plates on site



Type AFB
Shuttering element for accom-
modating joint plates on site

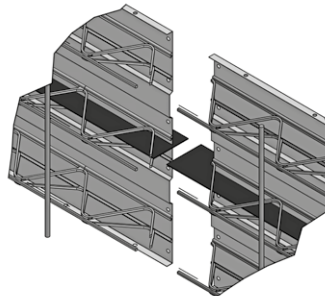


Type AF
Shuttering element with
factory fitted joint plate

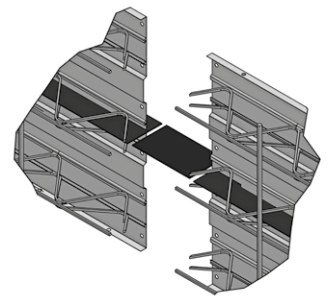


Type AF (Butt joint)

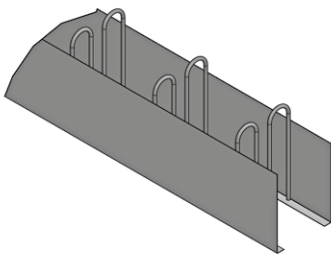
Fs > Groove and tongue system



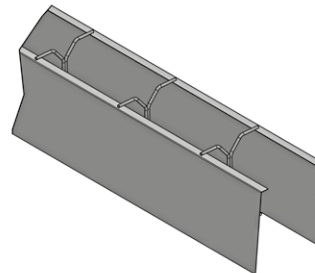
Fb > additional splice plate



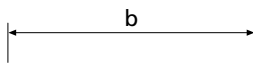
Type FBB
Shuttering element for upstands for
accommodating joint plates on site



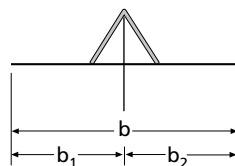
Type FBE
Shuttering element for upstands for
accommodating joint plates on site



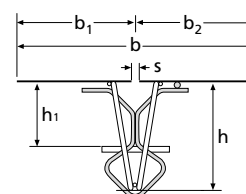
Type **A**



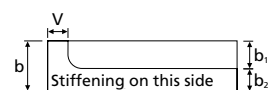
Type **AF**



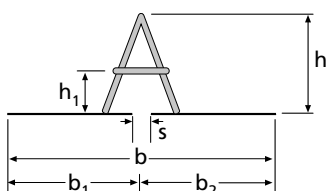
Type **AFE**



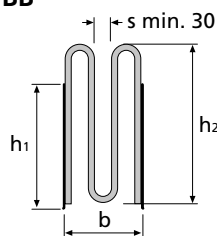
Upstand left



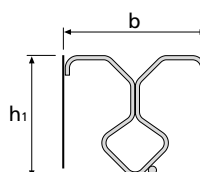
Type **AFB**



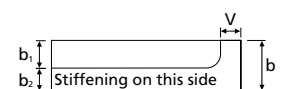
Typ **FBB**



Typ **FBE**

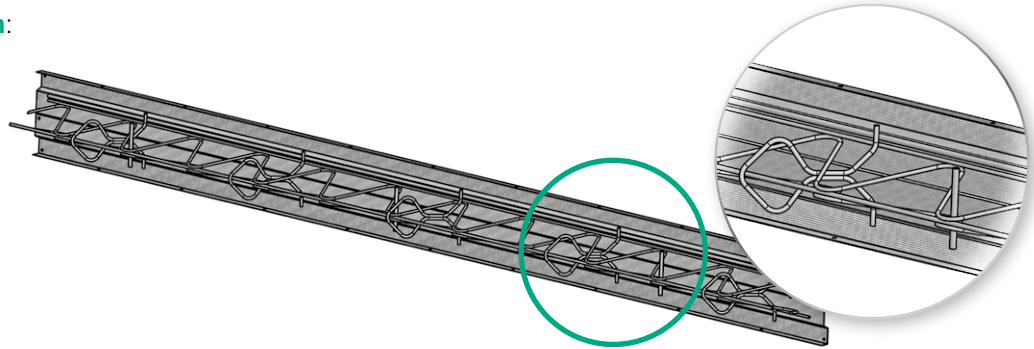


Upstand right



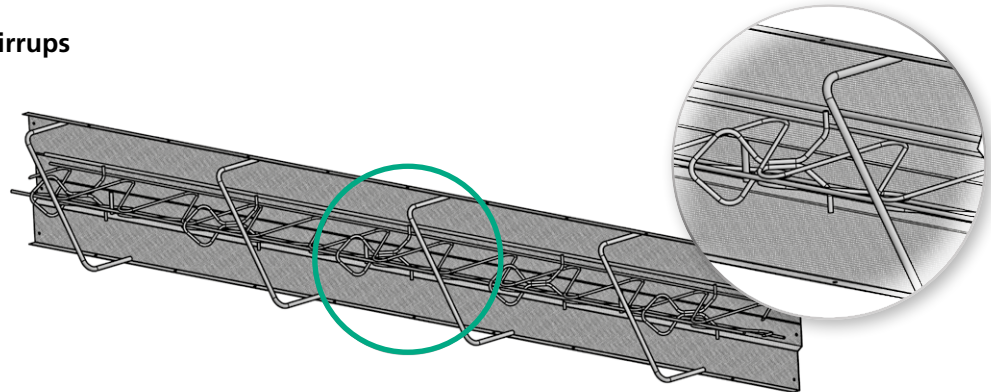
COMAX® Board – Overview of constructive stiffings – Example Type AFE

Element width **up to 200mm**:
- **no stiffing required**

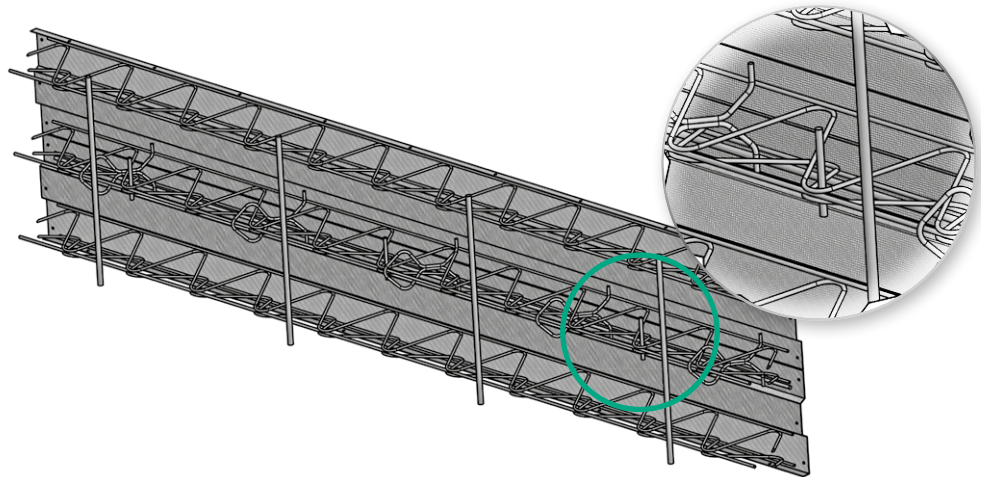


Element width **200 - 350mm**:
- **1 x lattice girder and 4 x U-stirrups**

Specific feature/exception:
Type A will be produced without any stiffings up to 250 mm

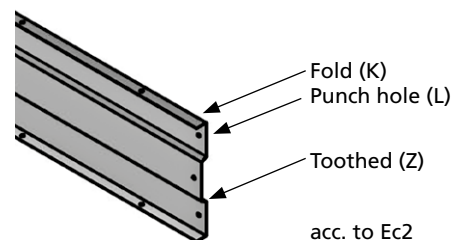
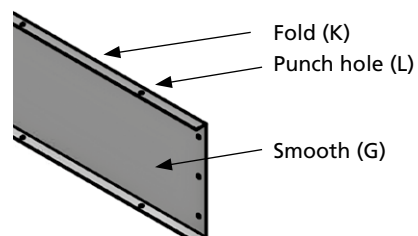


Element width **351mm - 700mm**:
- **3 x lattice girder and**
- **4 x cross rebars Ø 12mm**



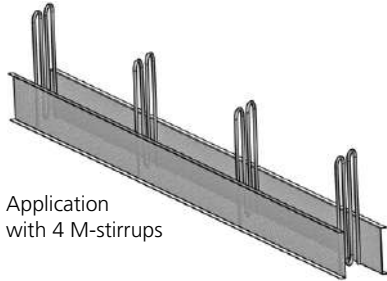
Element width **from 701mm**:
- **a constructive stiffing will be executed by lattice girders and cross rebars**
- the number of lattice girders and the Ø of rebars depend on the mounting width

Design / Options for all types

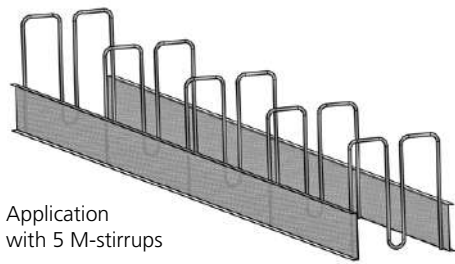


COMAX® Board – Order table

Standard-application FBB (light version)



Application
with 4 M-stirrups



Application
with 5 M-stirrups

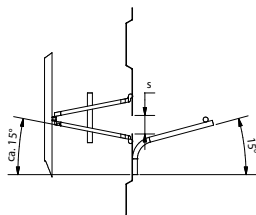
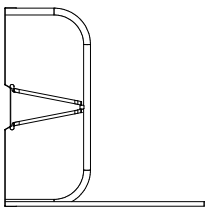
Item No.	Designation	h1 (mm)	h (mm)	b (mm)	s (mm)
30791100	COMAX® Board FBB 100	120	300	100	18

Application with 4 M-stirrups

Item No.	Designation	h1 (mm)	h (mm)	b (mm)	s (mm)
30791155	FBB 150	120	300	150	32
30791205	FBB 200	120	300	200	32
30791255	FBB 250	120	300	250	32

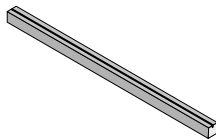
Application with 5 M-stirrups

Accessories

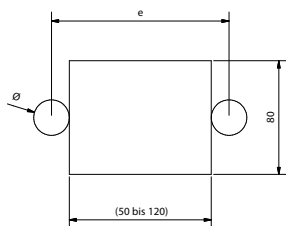
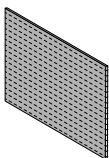


Item No.	Designation	Concrete cover	Length (mm)	Packing unit	Weight kg/piece
30791630	Joint tape support 15° for type AFB	–	–	–	–

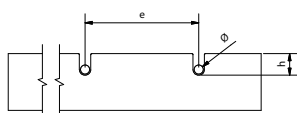
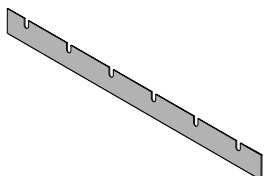
30791628	Stand strap	–	–	–	–
Application may differ from figure					



Item No.	Designation	Concrete cover	Length (mm)	Packing unit m/pallet	Weight kg/m
30793535	Board strip	35/35	1000	500	2.360
30794040	Board strip	40/40	1000	300	3.250
30794545	Board strip	45/45	1000	250	3.920
30795050	Board strip	50/50	1000	250	4.880

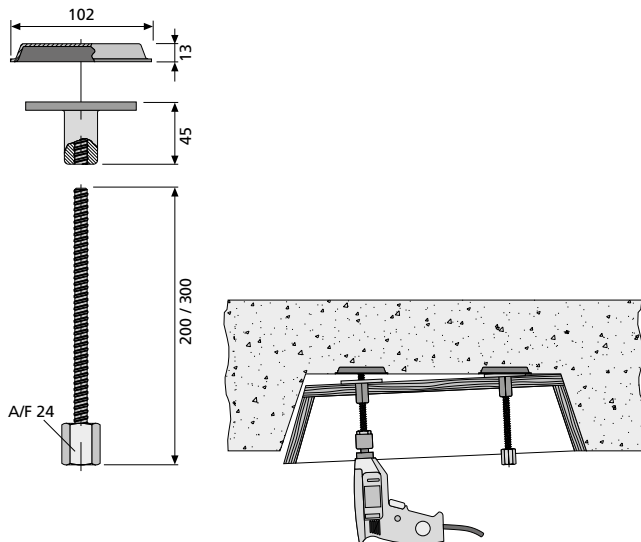


30795012	Raster metal sheet 50 - 120 x 80 mm			1	0.031
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30795016	Board ridge (fixing on site e.g. with metal screws)		120	1	0.800
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KNACKER®



Item No.	Designation	Packing unit	Weight kg/piece
30102600	Cover plate, hardened	1	0.150
30101500	Threaded element, Ø 80 mm	50	0.310
30100200	Bolt, 20 cm	1	0.300
30100300	Bolt, 30 cm	1	0.420

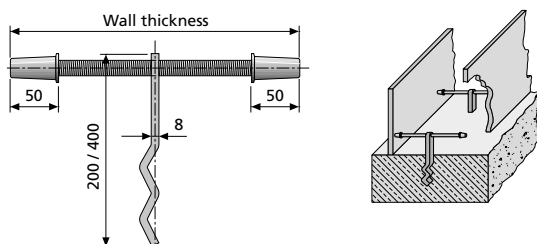
Even complex and tightly bonded shuttering elements can be removed easily with the **KNACKER®**. The hardened cover plate allows multiple use.

All parts are reusable.

Hole pre-drilled in formwork for 25 mm dia. threaded part.

KIM anchor

Spacer serving as shuttering stop.



Item No.	M 16 threaded bar length/wall thickness when using plastic caps	Packing unit	Weight kg/piece
36320000	19.5 cm/20 cm	1	0.260
36324000	23.5 cm/24 cm	1	0.310
36330000	29.5 cm/30 cm	1	0.390
36340000	39.5 cm/40 cm	1	0.520
36300000	KIM anchor 200	1	0.460
36304000	KIM anchor 400	1	0.750
36131000	Endcap 50	100	0.010
36307000	Concrete cap	1	0.230

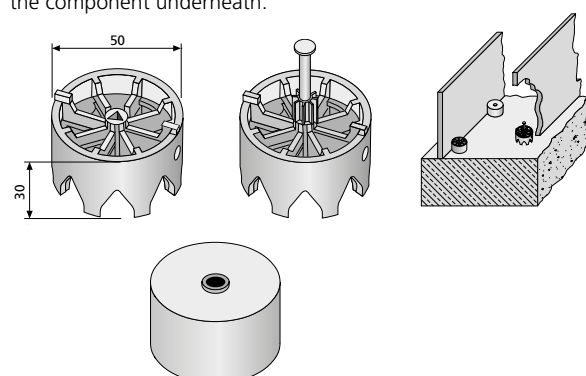
Other lengths available on request.

The crimped anchor plate without threaded bar is pressed into the wet concrete along the approximate centre axis of the subsequent wall. End caps in concrete (concrete cover 2 x 4,5 cm) can be used instead of plastic caps 50 mm (subtraction 2 x 2,5 mm).

M 16 thread allows exact alignment and ensures high strength.

CENTER

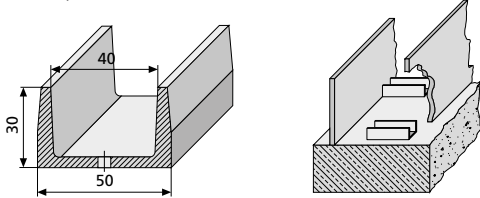
For adjusting formwork on the component underneath.



Item No.	Designation	Packing unit pieces	Weight kg/100 pc.
37305000	CENTER	250	2.215
37305010	CENTER with nail	100	11.000
61001199	Fibre concrete formwork stop	50	23.000
61001198	Cap-head bolt 80 mm	100	0.500

U-shaped base section

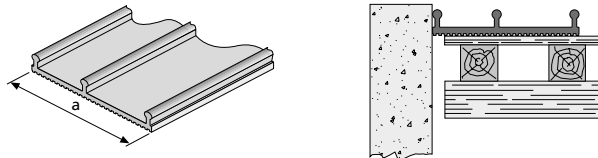
Spacer with nail holes for aligning and erecting wall shuttering panels. Use instead of wooden slats that are prone to swelling and subsequent rotting. Offset location instead of across full width prevents infiltration of water.



Item No.	Designation	Packing unit m/bundle	Weight kg/lin. m
71506000	Stock lengths 2.00 m	50	0.400
71511000	Cut lengths		0.400

DREIHORN®

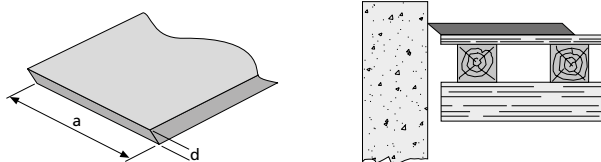
Bridging and cover strip for soffit shuttering panel joints. Remains anchored in the concrete.



Item No.	Size a	Packing unit m/bundle	Weight kg/lin. m
70360600	60 mm	50	0.410
70380700	80 mm	50	0.567

FLACH

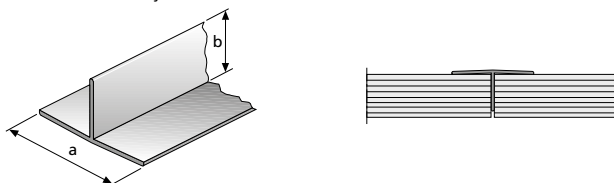
For sealing between ceilings and walls.
Reusable cover strip.



Item No.	Size a x d mm	Packing unit m/bundle	Weight kg/lin. m
70301000	60 x 5	50	0.340

T strip

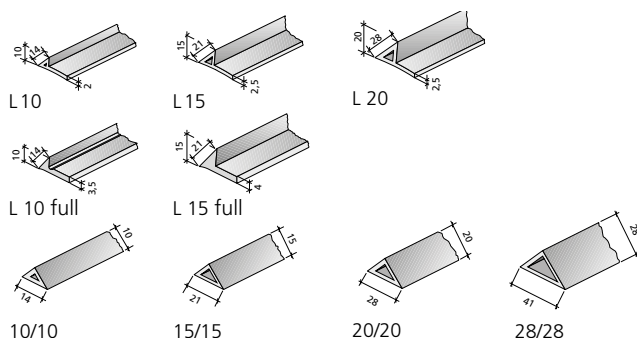
For joining and sealing shuttering panels
or boards at the joint.



Item No.	Size a x b mm	Packing unit m/bundle	Weight kg/lin. m
70540400	40 x 20	100	0.168

DREIKA

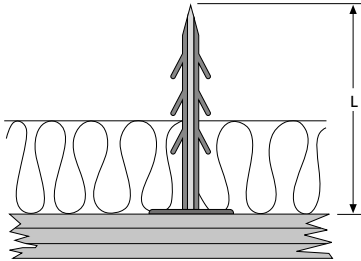
Triangular sections made of impact-resistant rigid PVC.
Nail lugs perforated for breaking corners.



Item No.	Designation	Packing unit m/bundle	Weight kg/lin. m
70100101	L 10 punched	100	0,101
70100154	L 15 punched	100	0,184
70100209	L 20 punched	100	0,190
70101108	L 10 hole punched	100	0,163
70101159	L 15 hole punched	100	0,269
70110107	10/10	100	0,049
70115150	15/15	100	0,087
70120200	20/20	100	0,170
70130100	28/28	50	0,280

PIKUS

BETOMAX® plastic retainer for insulation boards.



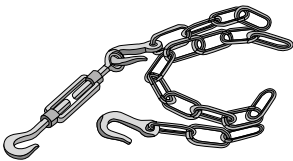
Item No.	Length	Packing unit pieces/bag	Weight kg/1000 pcs.
74175900	70	1000	3.750
74190800	90	1000	3.890
74197200	100	500	5.000
74198900	125	500	6.700
74199100	150	500	6.800

Tension chains

For securing, aligning and clamping. Length: 2500 mm.

Test load acc. to DIN 763:

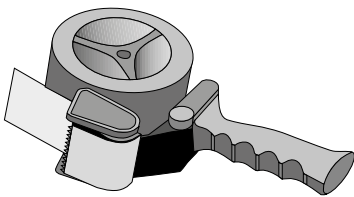
- Tension chains, light, Ø 5.5 mm = 10 kN
- Turnbuckle M12 = 16 kN
- Tension chains, heavy-duty, Ø 8 mm = 25 kN
- Turnbuckle M16 = 30 kN



Item No.	Designation	Packing unit piece	Weight kg/piece
28005700	Tension chains, light	1	1.350
28001100	Turnbuckle M 12	1	0.400
28008600	Tension chains, heavy-duty	1	2.800
28008616	Turnbuckle M 16	1	0.920

Formwork tape and dispenser

For applying tape to formwork joints



Item No.	Designation	Packing unit	Weight kg/piece
70650900	Adhesive tape 33 m x 50 mm	roll	0.340
70653300	Industrial dispenser	piece	0.630

Foam adhesive tape

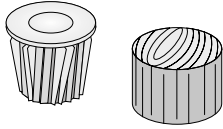
One-side adhesive tape for sealing formwork joints.



Item No.	Designation	Packing unit rolls/box	Weight kg/roll
70619600	Foam adhesive tape 16 mm x 6 mm	18 à 10 m	0.083

Wooden form plugs, plastic form plugs

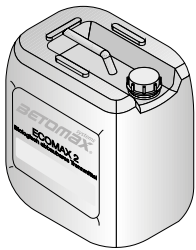
For sealing anchoring holes in the formwork shell.
Thickness: 22 mm



Item No.	Designation Größe Ø mm	Packing unit pieces/bag	Weight kg/1000 pcs.
67020320	Plastic form plugs Ø 20/24 mm	250	5.000
67022600	Wooden form plugs Ø 22 mm	1000	4.790

ECOMAX 2 form release agent

Biodegradable release agent for steel,
timber and plastic shuttering.



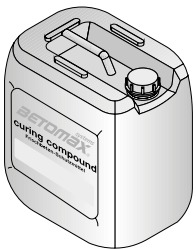
Item No.	Container size	Packing unit	Weight kg/piece
19201030	30 litre	Can	25.000
19201210	210 litre	Drum	184.800

Consumption: 1 litre for approx. 40 - 55m²

Water pollution class 1

Curing Compound

Milky liquid based on synthetic resin. Forms a transparent film
and thus prevents premature drying of concrete after removal
of shuttering. Loose cement particles are bonded.
Facilitates subsequent painting and coating.

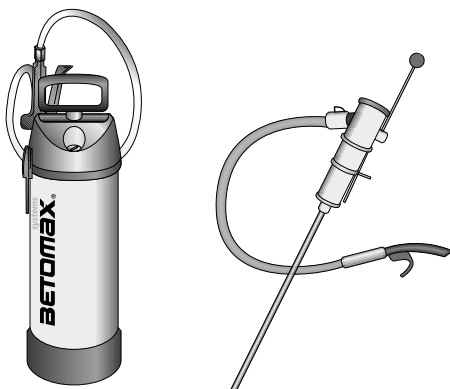


Item No.	Container size	Packing unit	Weight kg/piece
19202030	30 litre	Can	31.000
19202210	210 litre	Drum	218.000

Consumption: approx. 150 - 300 g per m²
(depending on substrate)

Pressure sprayer / pump

Oil-proof design, for applying ECOMAX 2 and Curing Compound.
Capacity 5 litres.



Item No.	Designation	Packing unit piece	Weight kg/piece
19203005	5 litre pressure sprayer	1	2.000
19203010	Drumpump	1	1.000

Delivery rate 13 l/min
submersible tube length 1,500 mm
hose dia. 16 mm
length 1,200 mm

High-quality raw materials and modern production sites constitute the guarantor for the technical competence of our products. For five decades, BETOMAX® *systems* has been working to the 'Made in Germany' concept of quality. Be it rationally manufactured series products or tailor-made individual solutions: BETOMAX® *systems* delivers a complete range of intelligent products and solutions for structural concrete work and civil engineering.

Anchoring technology

Tubular spreader technology

Reinforcement technology

Bridge building technology

Safety technology

Construction joint technology

Shuttering system technology

Building materials technology

Spacer technology

Work aids

When it matters...



systems
BETOMAX®

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Dyckhofstraße 1 41460 Neuss Germany
Phone +49 2131 2797-0
Fax +49 2131 2797-55
E-Mail export@betomax.de
www.betomax.de

Subject to technical change. 03 / 2019





Building materials

Bonding systems

Auxiliaries



When it matters...

BETOMAX[®]
systems
GmbH & Co. KG

Sealing mortar

Ready-to-use dry mixture based on cement, for sealing tapered and anchor holes. Grain size 0 to 4 mm.



- Controlled volume change during curing
- High early strength and very high final strength
- Additional protection against water penetration

Item No.	Designation	Packing unit bag/ bags per pallet	Weight kg/bag
19025000	Sealing mortar	1/42	25.000

Instructions for use

- Water requirement: depending on the size of tapered hole, between 14 % and 18 %, or 3.5 l - 4.5 l water per 25 kg mortar
- Mix all the mortar with approx. 2/3 of the water
- Add the rest of the water while mixing
- Mixing time approx. 4 minutes
- Do not use below 5°C

Consumption

- One bag yields 13 litres sealing mortar

Special sealing mortar

Ready-to-use dry mixture based on cement, grain size 0 to 0.32 mm. For sealing tapered and anchor holes and for repairs.



- Controlled volume change during curing
- High early strength and very high final strength
- Multi-purpose mortar, including for refinishing
- Application with mortar gun

Item No.	Designation	Packing unit bag/ bags per pallet	Weight kg/bag
19025031	Special-sealing mortar	1/42	25.000

Instructions for use

- Water requirement: depending on the size of tapered/anchor hole, or damage between 16 % and 20 %, or 4.0 l - 5.0 l water per 25 kg mortar
- Mix all the mortar with approx. 2/3 of the water
- Add the rest of the water while mixing
- Mixing time approx. 4 minutes
- Do not use below 5°C

Consumption

- One bag yields 13 litres special sealing mortar

Typical consumption values for sealing / special sealing mortar

- Cone EX in conjunction with FLUPP®: approx. 500 holes per bag
- Cone EX hole, e.g. EX 22/10 and EX FB: approx. 1,200 holes per bag
- MKK® BETOMAX® 15 tapered holes: approx. 60 holes per bag
- Size 22 tubular spreaders: per bag approx. 30 m tubular spreader (inside Ø 22), e.g. Dist K-22 spacer tube, rough

Mortar grout

Ready-to-use dry mixture based on cement.
Self-levelling, does not shrink.

For underpouring/grouting in foundation slabs, machine frames, precast concrete parts, anchors, bridge bearings, manhole covers and similar, without cavities. Not suitable for plane grouting.



- High tensile bending strength
- Resistant to frost and road salt

Max. size	Pouring height
0-1 mm	to 20 mm
0-4 mm	20-100 mm

Item No.	Designation	Packing unit bag/ bags per pallet	Weight kg/bag
19025010	Mortar grout Grain size 0-1	1/42	25.000
19025040	Mortar grout Grain size 0-4	1/42	25.000

Instructions for use

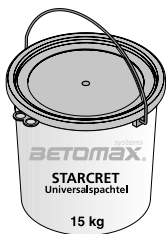
- Water requirement: depending on flow property, 3.5 l per 25 kg
- Mixing time approx. 4-6 minutes
- Pot life approx. 60 minutes at 20°C

Consumption

- 25 kg mortar yields 13 litres mortar grout

Starcret all-purpose filler

Ready-to-use dry mixture based on cement, modified with plastic. For repairs, coatings and smoothing and levelling concrete, plaster and mortar. Especially for cosmetic repairs to fair-faced concrete indoors and outdoors. Grain size 0 - 0.3 mm.



- High tensile bending strength
- Consistent quality and colour (pale concrete, no colouring pigments)

Item No.	Designation	Packing unit bucket/ buckets per pallet	Weight kg/bucket
19027015	Starcret- all-purpose filler	1/24	15.000

Instructions for use

- Surface must be cleaned and pre-wetted
- Water requirement approx. 3.3 l per 15 kg tub
- Mix to obtain a consistency suitable for spreading with a spatula
- Pot life approx. 60 minutes at 20°C

Consumption

- 15 kg dry mixture yields approx. 7.5 litres fresh filler
- Apply in layers of 1.5 - 5 mm

Compressive strength N/mm ²			Tensile bending strength in N/mm ²		
3 days	7 days	28 days	1 day	7 days	28 days
5.8	21	28	1.9	3.7	5.8

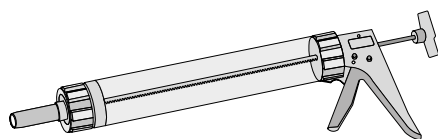
Mixer

For mixing BETOMAX® mortar products.
Suits to power drill.

<i>Item No.</i>	<i>Designation</i>	<i>Packing unit piece</i>	<i>Weight kg/piece</i>
61801600	Mixer	1	0.290

Mortar gun

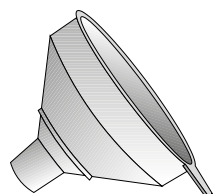
For filling cavities in spreaders and cones
with *special sealing mortar*.



<i>Item No.</i>	<i>Designation</i>	<i>Packing unit piece</i>	<i>Weight kg/piece</i>
61801200	Mortar gun	1	1.470

Filling funnel

Facilitates filling *mortar gun* with *sealing mortar*.



<i>Item No.</i>	<i>Designation</i>	<i>Packing unit piece</i>	<i>Weight kg/piece</i>
61801400	Filling funnel	1	0.260

Two component adhesive in tins

Inspection report

Epoxy resin-based material. For waterproof tie points with fibre concrete and fair-faced concrete plugs.

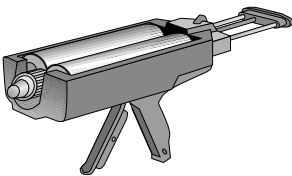


Item No.	Designation	Packing unit	Weight kg/components A+B
61800200	Two component adhesive	2 tins (A+B)	2 x 1.500

Two component adhesive cartridge

Inspection report

Epoxy resin-based material. For making waterproof tie points with fibre concrete plugs and fair-faced concrete plugs.



Item No.	Designation	Packing unit	Weight kg/components A+B
61800300	Two component adhesive	Twin cartridge (A+B)	0.820
61800310	Two component injection gun	each	1.220
19403020	mixing nozzle	each	0.009

Two component adhesive – tin

- The components are colour-coded: component A is white and component B black
- Mixing ratio 1:1
- Test report as recommended by *German KTW*

Instructions for use

- Mixing time: until the adhesive is free from streaks
- The surfaces being joined must be free from dust and grease
- Processing time: 2 - 2.5 hours at +20° C, min. working temperature 8°C
- Reaction temperature: 50-60°C
- 1 kg of adhesive is sufficient for approx. 40 concrete plugs *MKK® B 15*
- 1 kg of adhesive is sufficient for approx. 150 fibre concrete plugs *FB 22 / 50 mm*

Two component adhesive – cartridge

- Twin cartridge contains components A and B
- Components blended by mixing nozzle
- Test report as recommended by *German KTW*

Instructions for use

- The surfaces being joined must be free from dust and grease
- Minimum working temperature 8°C
- 1 kg of adhesive is sufficient for approx. 40 concrete plugs *MKK® B 15*
- 1 kg of adhesive is sufficient for approx. 150 fibre concrete plugs *FB 22 / 50 mm*

BETOFIX

For the bonding of, e.g. concrete plugs, even for installation in problematic locations, e.g. overhead.

Item No.

Designation

Packing
unit

Weight
kg/unit

86430052

BETOFIX 600 ml tube with nozzle

tube

0.900/piece

86430060

Gun for tube

piece

1.020/piece



Power Hit

Inspection report

Two-component synthetic resin mortar for anchoring rebars and threaded bars and sleeves in all customary building materials without exerting any expansion pressure.

- Reliable long-term behaviour
- High load values
- No foil packaging
- Mechanical damage to cartridge practically ruled out

Item No.

Designation

Packing
unit
piece

Weight
kg/piece

19403000

BETOMAX® Power Hit

1

0.600

19403100

BETOMAX® Power Hit-
injection gun

1

0.950

19403150

BETOMAX® Power Hit-
blow-out pump

1

0.500

19403180

BETOMAX® Power Hit-
14 mm round brush

1

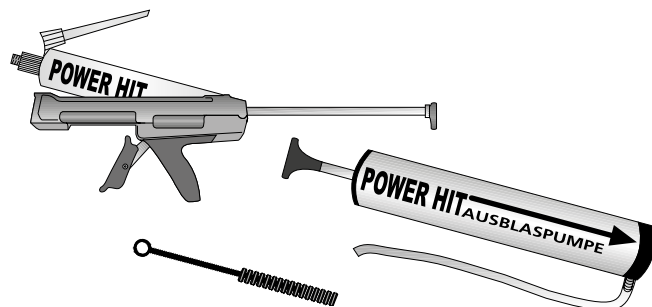
0.013

19403020

Mixing nozzle

1

0.009



BETOMAX® Power Hit blow-out pump and
BETOMAX® Power Hit 14 mm round brush

Pull-out tests in crack-free concrete (5 tests per diameter):

Test results

Tie rod diameter (d) mm	Anchoring depth (h_{ef}) mm	Hole diameter (d_o) mm	Concrete strength (f_{cm}) N/mm ²	Mean load ($N_{u,m}$) kN	Variation coefficient (v) %	Failure type ¹⁾
10	90	12	41	45.0	7.0	5 x H
12	110	14	41	56.0	5.3	5 x H
16	125	18	41	63.1	9.9	4 x H / 1 x H/B
20	180	24	60	110.9	17.7	4 x H / 1 x H/B

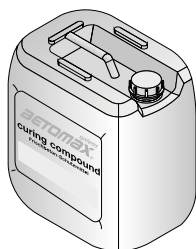
¹⁾ H = Tie rod extracted

B = Near-surface concrete rupture

Source: Stuttgart University, Institute for Building Materials

Curing Compound

Concrete curing agent. Milky liquid based on synthetic resin. Forms a transparent film to protect the freshly exposed concrete against premature drying. Binds loose concrete particles. Allows subsequent application of paint and coatings.



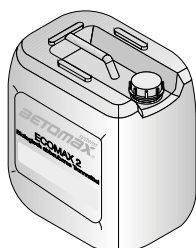
Item No.	Designation	Packing unit	Weight kg/piece
19202030	Curing Compound	can 30 l	31.000
19202210	Curing Compound	drum 210 l	218.000

Consumption: approx. 150 - 300 g per m² depending on ground condition

ECOMAX 2

Form release agent for steel and absorbent formwork, e.g. timber, coated chipboard etc. Biodegradable.

Can be used up to a formwork temperature of 100°C. **ECOMAX 2 does not contain** any waxes, paraffins or silicones. If used properly, **no impairment** of plaster or coating adhesion.



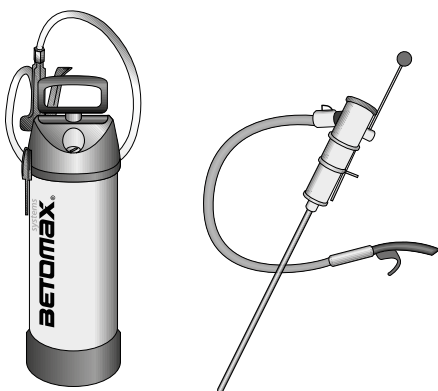
Item No.	Designation	Packing unit	Weight kg/piece
19201030	ECOMAX 2	can 30 l	28.000
19201210	ECOMAX 2	drum 200 l	192.000

Consumption: 1 litre sufficient for approx. 40 – 55 m²

Water pollution class 1

Pressure sprayer / pump

Oil-proof design, for applying **ECOMAX 2** and **curing compound**. Capacity 5 litres.



Item No.	Designation	Packing unit	Weight kg/piece
19203005	5-litre pressure sprayer	1	2.000
19203010	Drumpump	1	1.000

Delivery rate: 13 l/min.
submersible tube length: 1.500 mm
Hose: Ø 16 mm
Length: 1.200 mm

High-quality raw materials and modern production sites constitute the guarantor for the technical competence of our products. For five decades, BETOMAX® *systems* has been working to the 'Made in Germany' concept of quality. Be it rationally manufactured series products or tailor-made individual solutions: BETOMAX® *systems* delivers a complete range of intelligent products and solutions for structural concrete work and civil engineering.

Anchoring technology

Tubular spreader technology

Reinforcement technology

Bridge building technology

Safety technology

Construction joint technology

Shuttering system technology

Building materials technology

Spacer technology

Work aids

When it matters...

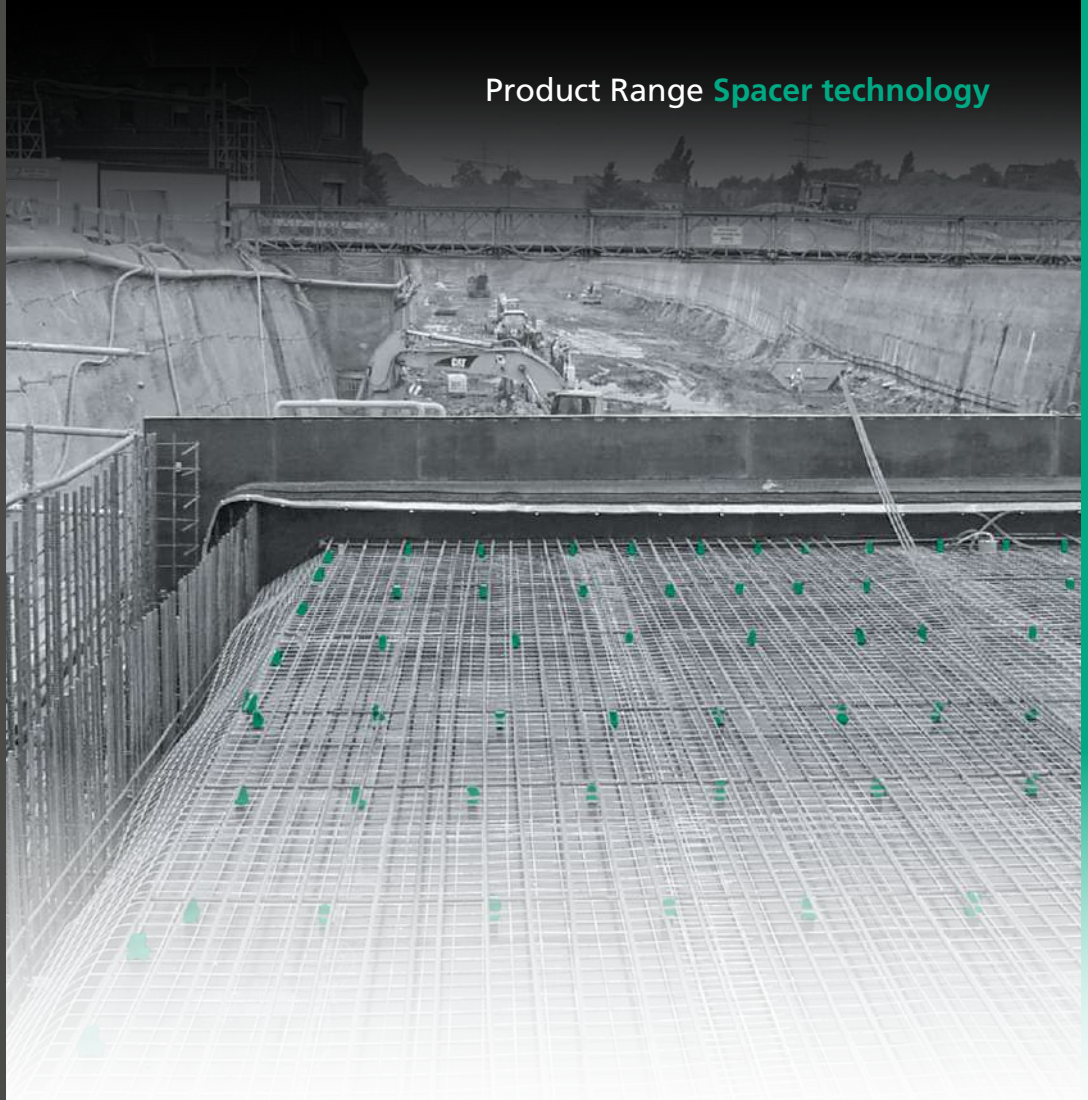


systems
BETOMAX®

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Subject to technical change. 03 / 2019





Spacers plastic / steel

Fibre concrete spacers (FC)

Accessories

Tools

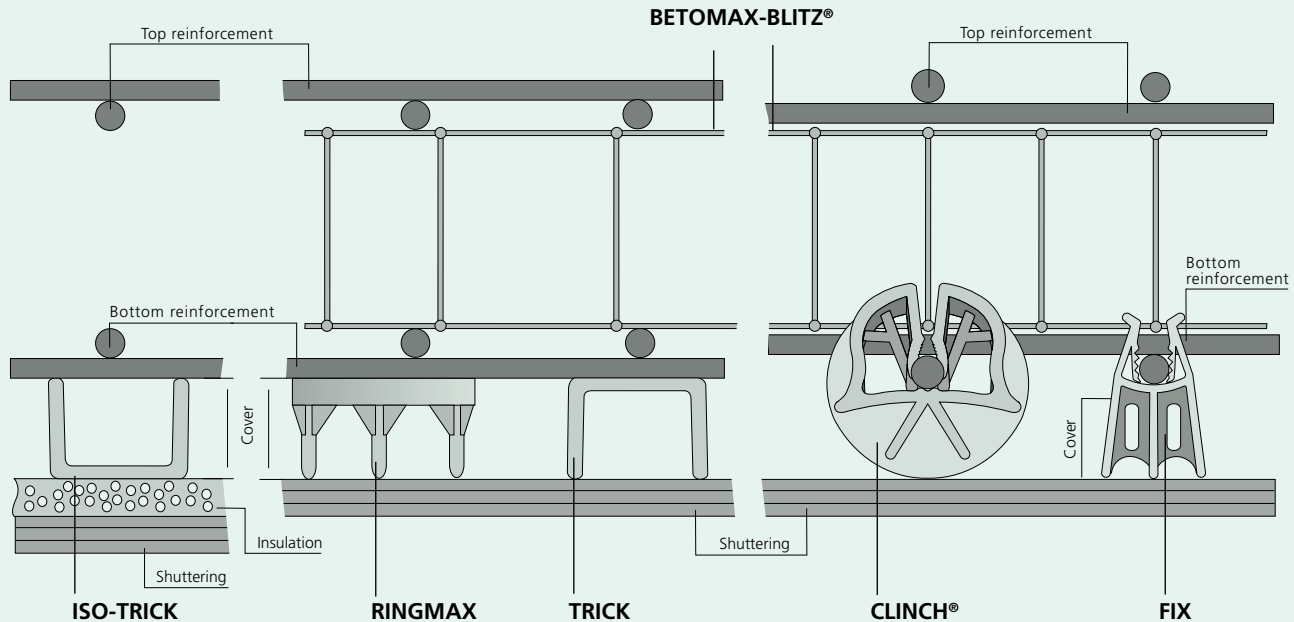


When it matters...

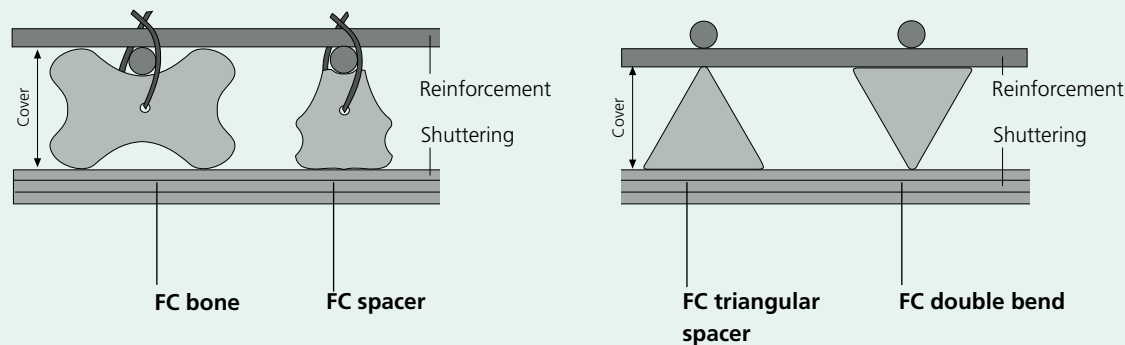
BETOMAX[®] *systems*
GmbH & Co. KG

BETOMAX® - Spacer technology systems – Applications, properties, benefits

BETOMAX® - plastic/steel spacer technology systems



BETOMAX® - fibre concrete (FC) spacer technology systems

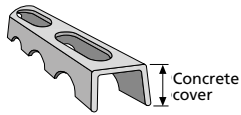


BETOMAX®-fibre concrete products

- Acc. to the DBV (German Institute for Concrete) code of practice c-L2 F/T/A/D (see page 10)
- Do not contain any asbestos
- Resist ageing
- Resist pressure
- Low water penetration depth
- Especially suitable for textured and fair-faced concrete
- Comply with concrete standard EC 2 and fire protection standard 4102
- Fibre concrete products have practically the same expansion coefficient as in-situ concrete

TRICK

Stable all-purpose plastic spacer for universal use; concrete cover 20 - 50 mm.*



Item No.	Designation	Concrete cover mm	Packing unit m/bundle – m/pallet	Weight kg/m
50020070	Trick 20	20	100 – 4800	0.130
50025090	Trick 25	25	100 – 4200	0.150
50030050	Trick 30	30	100 – 3000	0.240
50035020	Trick 35	35	50 – 2450	0.255
50040060	Trick 40	40	50 – 2100	0.280
50050040	Trick 50	50	50 – 1500	0.450

- For very high loads according to *DBV code of practice*
- Concrete cover always correct for any installation situation
- Fast installation
- Large apertures in the rail ensure good adhesion with concrete
- For horizontal reinforcement
- Does not break and splinter when sawing on site

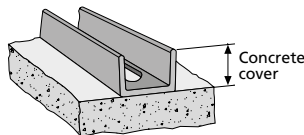
According to DIN 4102, conventional plastic spacers do not impair the fire resistance period of building components. The spacer material does not, therefore, have to meet more stringent fire protection requirements.

Installation example

For rebar Ø 8-14 mm consumption approx. 1.5 m run/m²

ISO-TRICK

ISO-TRICK for soft grounds, e.g. on insulated ceilings and concrete floors.



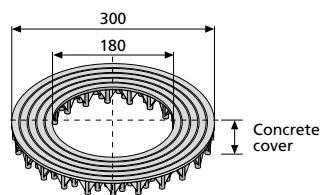
Item No.	Designation	Concrete cover mm	Packing unit m/bundle – m/pallet	Weight kg/m
50020240	ISO-TRICK 20	20	100 – 4800	0.150
50025280	ISO-TRICK 25	25	100 – 4200	0.175
50030210	ISO-TRICK 30	30	50 – 3000	0.265
50035230	ISO-TRICK 35	35	50 – 2450	0.295
50040270	ISO-TRICK 40	40	50 – 2100	0.322
50050250	ISO-TRICK 50	50	50 – 1500	0.600

Installation example cf. *TRICK*

RINGMAX

Strong spacer, especially suitable for fair-faced concrete and use with mesh reinforcement. Separable set of five rings. Solid, reinforced design.

Item No.	Designation	Concrete cover mm set/bag	Packing unit	Weight kg/set
55020010	RINGMAX 20	20	40 sets à 5 pcs./bag	0.199
55025020	RINGMAX 25	25	40 sets à 4 pcs./bag	0.202
55030030	RINGMAX 30	30	40 sets à 5 pcs./bag	0.205

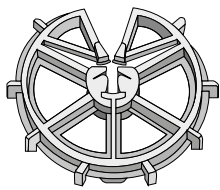
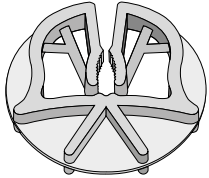


Installation example

For mesh reinforcement, consumption approx. 1 set / 2 - 3 m²

CLINCH®

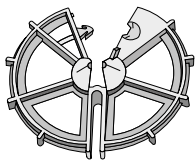
CLINCH® spacers with high pressure resistance. Especially for vertical reinforcement.



Item No.	Size	Concrete cover mm	for rebar Ø	Packing unit pieces/bag	Weight kg/1000 pcs.
50151270	15/12	15	5-10	1000	3.180
50201240	20/12	20	5-10	500	5.500
50202060	20/20	20	14-18	500	8.880
50250600	25/ 6	25	4-6	500	8.000
50251210	25/12	25	8-10	500	7.750
50301290	30/12	30	8-10	500	10.240
50301680	30/16	30	12-14	250	16.880
50302400	30/24	30	14-22	250	16.250
50351260	35/12	35	6-10	250	10.640

Klemm-CLINCH

The clip ensures a tight seat on the reinforcement. The Klemm-CLINCH cannot slip.

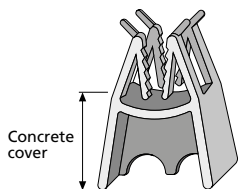


Item No.	Size	Concrete cover mm	for rebar Ø	Packing unit pieces/bag	Weight kg/1000 pcs.
51350860	35/ 8	35	8-10	250	15.730
51401660	40/16	40	8-14	250	19.880
51451630	45/16	45	8-16	250	22.960
51501250	50/12	50	8-12	250	24.240

Other dimensions available on request.

FIX

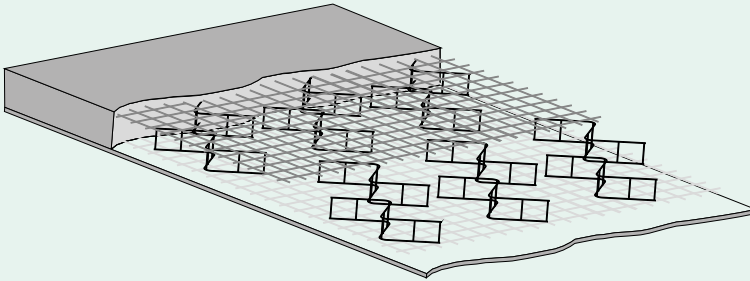
Spacer with gripping jaws. Does not tilt. Good concrete adhesion.



Item No.	Concrete cover mm	for rebar Ø	Packing unit pieces/bag	Weight kg/1000 pcs.
56015300	15	14	1000	3.500
56045700	45	16	500	12.800

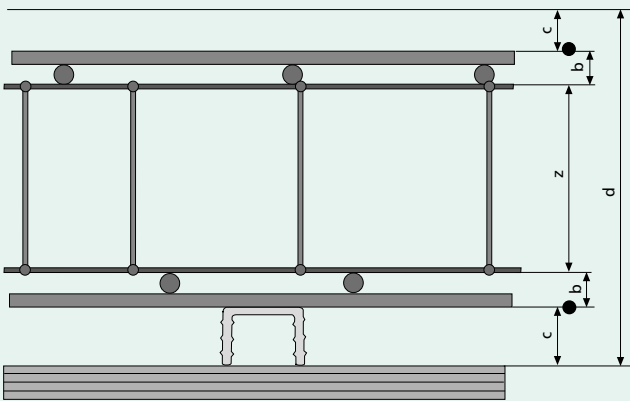
BETOMAX-BLITZ® – Applications, properties, benefits

BETOMAX-BLITZ® - application example



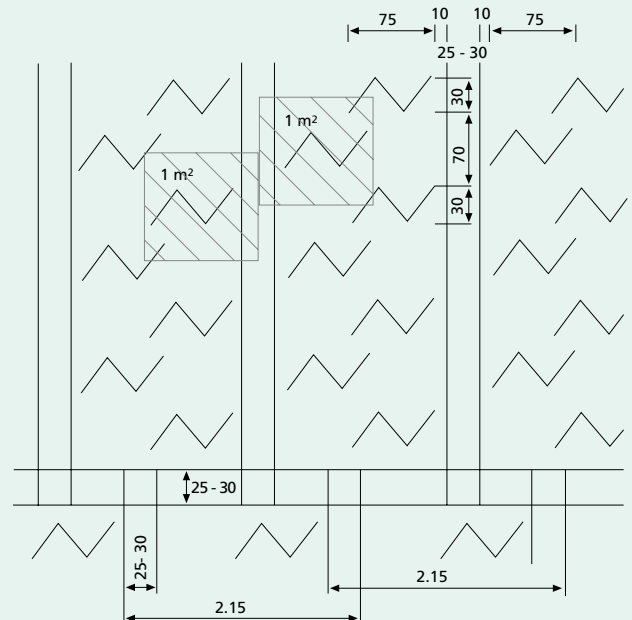
- Generous support depth > 30 cm ensures maximum stability
- Rests on bottom reinforcement, therefore no contact with formwork skin
- Specifically for fair-faced and textured concrete
- Optimal load distribution
- Substantially less expensive than linear support cages
- Efficient installation routine saves time
- Corrosion ruled out by embedding in concrete
- Delivered on European standard pallets
- Practical delivery quantity: 25 spacers per bundle

BETOMAX-BLITZ® - application example



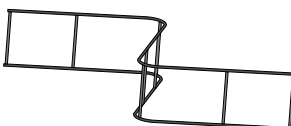
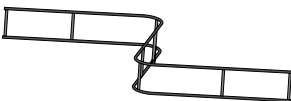
z = BETOMAX-BLITZ® height
b = Reinforcement - height
c = Concrete cover
d = Component thickness

BETOMAX-BLITZ® - layout Consumption = 1 set per m²



BETOMAX-BLITZ®

Spacer for top reinforcement.
Length 75 cm.



Item No.

Height cm

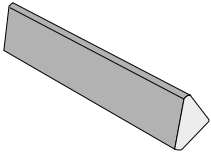
Packing unit pieces/pallet

Weight kg/piece

40305000	5	1000	0.300
40306000	6	1000	0.310
40307000	7	1000	0.320
40308000	8	1000	0.330
40309000	9	1000	0.340
40310000	10	1000	0.350
40311000	11	500	0.420
40312000	12	500	0.430
40313000	13	500	0.440
40314000	14	500	0.450
40315000	15	500	0.460
40316000	16	500	0.470
40318000	18	500	0.490
40320000	20	500	0.510
40322000	22	300	0.680
40324000	24	300	0.700
40326000	26	300	0.720
40328000	28	300	0.740
40330000	30	300	0.760

FC triangle solid profile

Linear spacer.

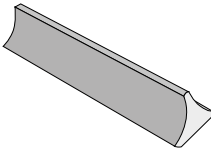


Item No.	Concrete cover mm	Length mm	Packing unit m/pallet	Weight kg/m
61302000	20	1000	500	0.530
61302500	25	1000	1000	0.840
61303000	30	1000	800	1.170
61303500	35	1000	500	1.830
61304000	40	1000	500	2.100
61304500	45	1000	400	2.420
61305000	50	1000	350	3.010
61305500	55	1000	300	3.600
61306000	60	1000	250	4.700

Other dimensions available on request.

FC triangle concave

Linear spacer; concave.

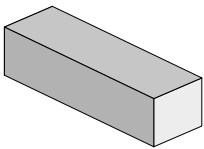


Item No.	Concrete cover mm	Length mm	Packing unit m/pallet	Weight kg/m
61353000	30	1000	900	1.010
61353500	35	1000	700	1.300
61354000	40	1000	600	1.410
61354500	45	1000	500	1.820
61355000	50	1000	350	2.270
61355500	55	1000	300	2.700
61356000	60	1000	300	4.000

Other dimensions available on request.

FC square solid profile

Linear spacer for heavy reinforcement or built-in components.

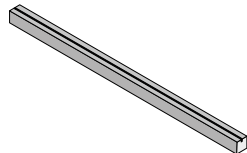


Item No.	Concrete cover mm	Length mm	Packing unit m/pallet	Weight kg/m
61412500	FC square profile 25/25	1000	500	1.211
61413000	FC square profile 30/30	1000	500	1.857
61413500	FC square profile 35/35	1000	500	2.480
61414000	FC square profile 40/40	1000	300	3.225
61415000	FC square profile 50/50	1000	250	5.960
61416000	FC square profile 60/60	1000	150	7.130
61417500	FC square profile 75/75	1000	100	12.730

Other dimensions available on request.

Board strip

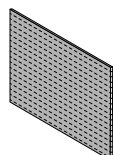
FC square profile slitted for mounting raster metal sheets.



Item No.	Concrete cover mm	Length mm	Packing unit m/pallet	Weight kg/m
30793535	35/35	1000	500	2.360
30794040	40/40	1000	300	3.250
30794545	45/45	1000	250	3.920
30795050	50/50	1000	250	4.880

Raster metal sheet

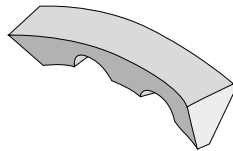
For sealing the construction joint.



Item No.	Concrete cover mm	Packing unit m/pallet	Weight kg/piece
30795012	Raster metal sheets 50 - 120 x 80 mm	1	0.031

FC bend

Linear spacer with studs for fair-faced concrete. Applications: pre-cast concrete parts and reinforced concrete with mesh reinforcement.

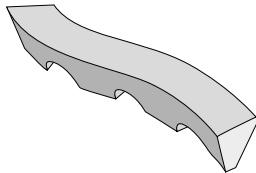


Item No.	Concrete cover mm	Length mm	Packing unit pieces/bundle pieces/pallet	Weight kg/piece
61612533	25	330	20/2000	0.350
61613033	30	330	20/1500	0.486
61614533	45	330	20/ 800	0.800
61615033	50	330	20/1000	0.910

Other dimensions available on request.

FC double bend

FC double bend spacer with studs for fair-faced concrete. Applications: precast concrete parts and reinforced concrete with rebars.

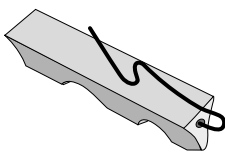


Item No.	Concrete cover mm	Length mm	Packing unit pieces/pallet	Weight kg/piece
61552580	25	800	500	0.560
61553080	30	800	500	0.700
61553580	35	800	350	0.940
61554080	40	800	300	1.030
61554580	45	800	500	1.160
61555080	50	800	500	1.700

Other dimensions available on request.

FC triangle concave with steel clip

Linear spacer; concave for vertical reinforcement.



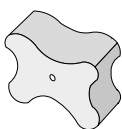
Item No.	Concrete cover mm	Length mm	Packing unit pieces/unit pieces/pallet	Weight kg/piece
61312518	25	180	20/4000	0.160
61313018	30	180	125/3000	0.180
61313518	35	180	100/2000	0.210
61314018	40	180	100/2000	0.250
61314518	45	180	80/1600	0.320
61315018	50	180	50/1500	0.400
61323033	30	330	20/2000	0.331
61323533	35	330	20/2000	0.420
61324033	40	330	10/1500	0.460
61324533	45	330	10/1200	0.600
61325033	50	330	10/1000	0.750

Other dimensions available on request.

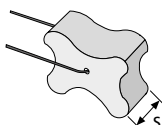
FC spacer

Single spacer for variable concrete cover; especially stable quality.

Without
wire



With
galvanized
wire



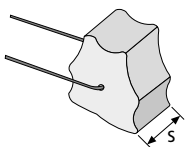
Item No.	Concrete cover mm	Cut width S in mm	Packing unit pieces/bag – bags/pallet	Weight kg/1000 pcs.
61282030	20/25/30	24	500 – 40	36.500
61283550	35/40/50	24	250 – 40	89.000
61292030	20/25/30	24	500 – 40	37.000
61293550	35/40/50	24	250 – 40	91.200
61294560	45/55/60	24	150 – 40	141.000

Other dimensions available on request.

FC spacer compact

Compact version for variable concrete cover, with galvanized wire.

Also available without wire.

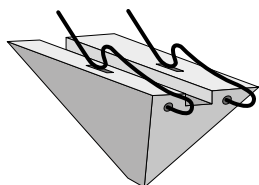


Item No.	Concrete cover mm	Cut width S in mm	Packing unit pieces/bag – bags/pallet	Weight kg/1000 pieces
61213024	30	24	450 – 40	42.220
61213524	35	24	350 – 40	49.280
61214024	40	24	350 – 40	57.140
61214524	45	24	350 – 40	61.420
61215024	50	24	250 – 40	74.000

Other dimensions available on request.

FC pyramid with 2 steel clips

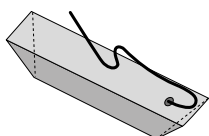
Single spacer for concrete pipes, for steel bar dia. 6-10 mm.



Item No.	Concrete cover mm	Packing unit pieces/bag – pieces/pallet	Weight kg/piece
61003040	30	200/5000	0.054
61003540	35	200/5000	0.104
61004045	40	200/5000	0.120
61004545	45	125/5000	0.140
61005045	50	125/5000	0.180
61005545	55	125/5000	0.200
61006045	60	100/5000	0.220

FC triangle concave flat with 2 bevel cuts and clip

Linear spacer for vertical reinforcement for concrete pipes and similar.

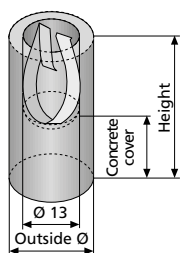


Item No.	Concrete cover mm	Length mm	Packing unit pieces/Gibo	Weight kg/piece
61334018	40	180	2000	0.254
61334518	45	180	2000	0.327
61335018	50	180	2000	0.409
61335518	55	180	2000	0.538
61336018	60	180	2000	0.650

Other dimensions available on request.

FC support with leaf spring and punch protection

Single spacer for concrete pipes.
(For steel bar dia. 6-10 mm)



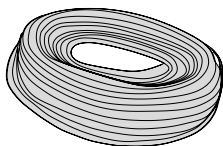
Item No.	Concrete cover mm	Outside Ø mm	Height mm	Packing unit pieces/bag	Weight kg/piece
61633050	30	30	50	100	0.078
61634065	45	40	65	100	0.180
61636065	45	60	65	50	0.398

Other dimensions available on request.

Cast concrete spacers available on request.

Binding wire

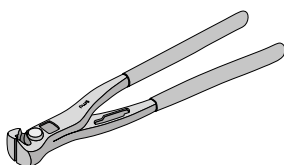
For tying reinforcement.



<i>Item No.</i>	<i>Designation</i>	<i>Wire Ø mm</i>	<i>Packing unit kg/bucket – buckets/pallet</i>	<i>Weight kg/bucket – kg/pallet</i>
94141020	black	1.4	20 – 36	20 – 720
94142020	galvanized	1.4	20 – 36	20 – 720

Binding pliers

Narrow design. Can be used reliably even in areas difficult to access.



<i>Item No.</i>	<i>Designation</i>	<i>Length mm</i>	<i>Packing unit piece</i>	<i>Weight kg/piece</i>
94300300	Binding pliers	300	1	1.000

Regulated requirements concerning test loads and permissible deformation

L1

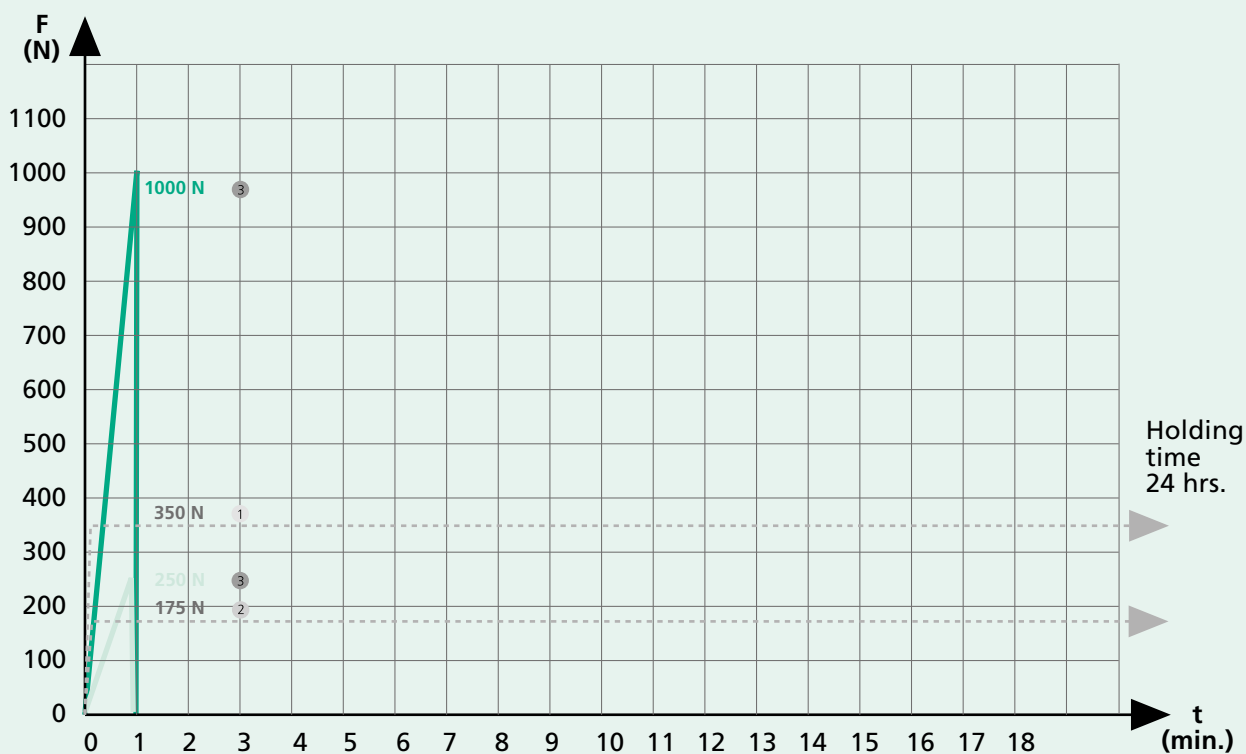
No elevated requirements as regards load-bearing capacity and overturning stability.
Typically for use in cases where the reinforcement is not exposed to foot traffic (e.g. in the production of precast units).

L2

Elevated requirements as regards load-bearing capacity and overturning stability. For use as a standard spacer during in-situ concrete construction (e.g. where reinforcement is exposed to foot traffic, as a spacer that is stressed when formwork is being erected, and where external loads are placed on the installed reinforcement for temporary storage).

Requirements	Performance class	
	L1	L2
Test load requirements		
static short-time test acc. to section A 2.2 (DBV)	250 N ③	1000 N ③
overturning stability acc. to section A 2.3 (DBV)		500 N
endurance test acc. to section A 2.4 (DBV)		350 N ① 175 N ②
Permissible deformation		
nom $c_v \leq 20$ mm	1 mm	1 mm
nom $c_v > 20$ mm	2 mm	2 mm

- ① Intermittent spacers
- ② Linear spacers
- ③ With rigid spacers, such as reinforced cement-bound spacers, the mean of the measured load capacity (actual load) must be twice as high



Translated excerpt from DBV Code of Practice „spacers“

High-quality raw materials and modern production sites constitute the guarantor for the technical competence of our products. For five decades, BETOMAX® *systems* has been working to the 'Made in Germany' concept of quality. Be it rationally manufactured series products or tailor-made individual solutions: BETOMAX® *systems* delivers a complete range of intelligent products and solutions for structural concrete work and civil engineering.

Anchoring technology

Tubular spreader technology

Reinforcement technology

Bridge building technology

Safety technology

Construction joint technology

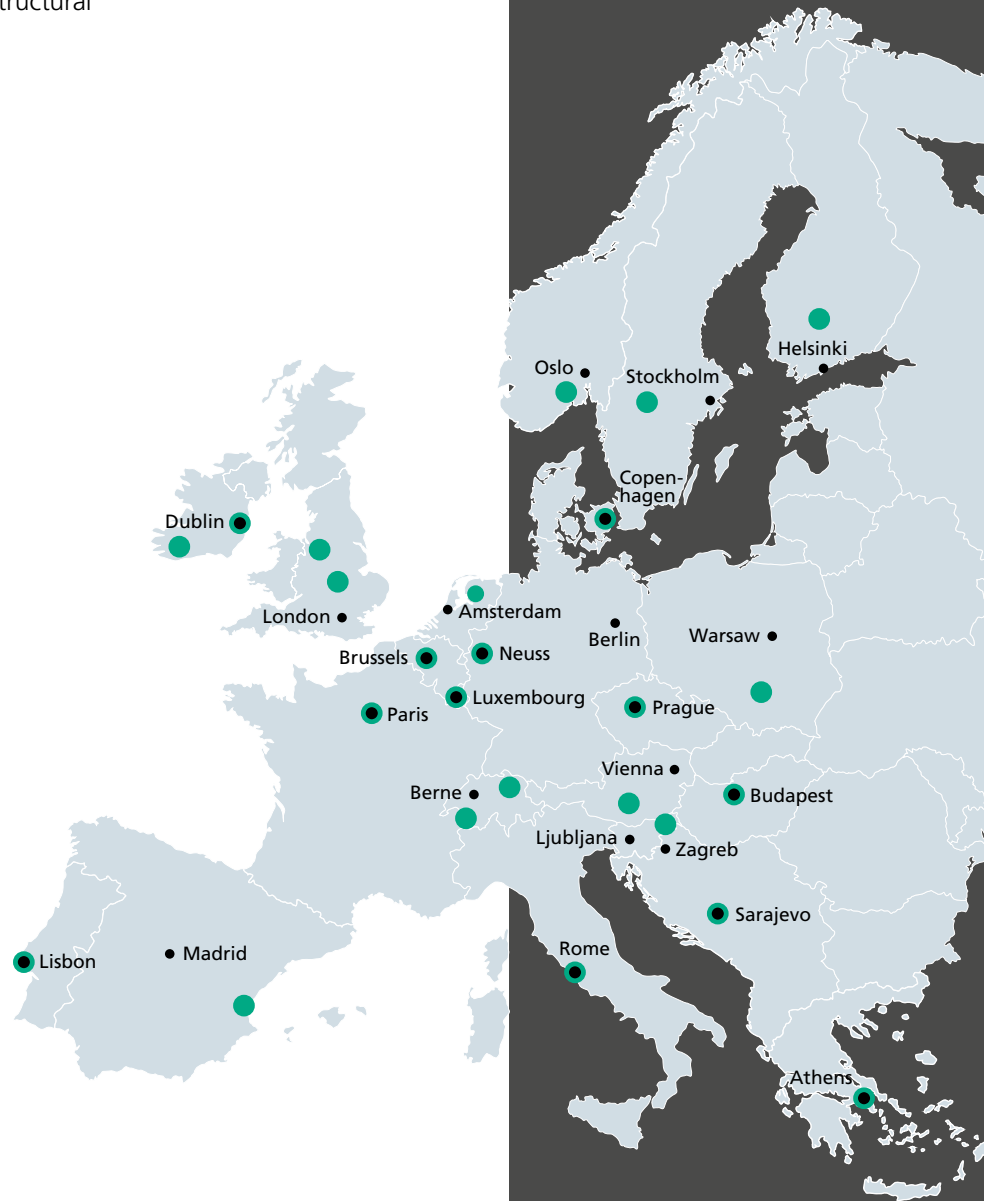
Shuttering system technology

Building materials technology

Spacer technology

Work aids

When it matters...



systems
BETOMAX®

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www.betomax.de

Subject to technical change. 03 / 2019





Shuttering aids
Special items



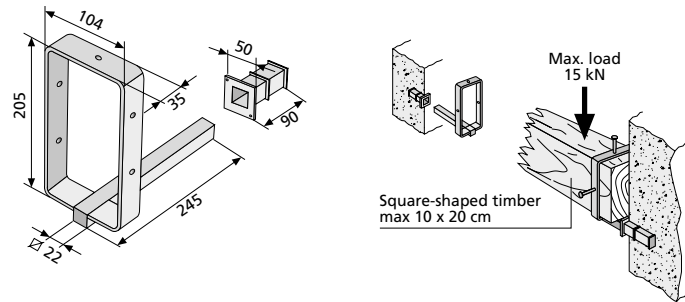
When it matters...

systems
BETOMAX®
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CLIP Scaffold board holder

Anchor for accommodating timbers (max. 10 x 20 cm).
For use in reinforced concrete floors/walls/cavities, e.g. in elevator shafts. Max. load: 15 kN

Attention: Clip- shoe has to be inserted completely into the sleeve

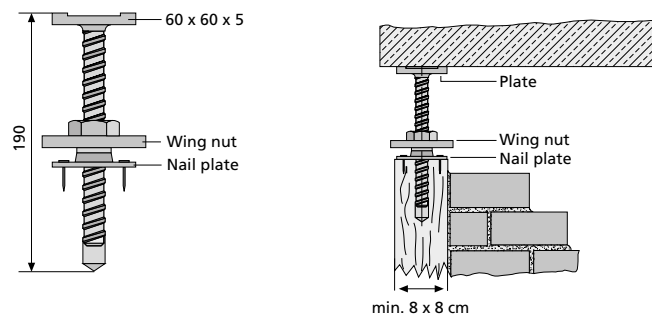


Item No.	Designation	Packing unit pieces	Weight kg/piece
30412000	CLIP shoe, galvanized	10	1.710
30428000	CLIP sleeve	50	0.020
35641101	Cover plug-sleeve self adhesive 50x50x1 mm	50	0.055

BLOCKER expansion chuck for timbers

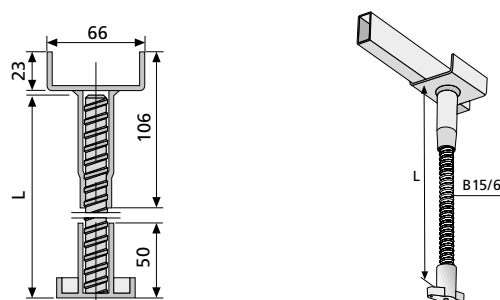
Spindle top module for squared timbers (min. 8 x 8 cm).
Used as tension support, e.g. as limit stop for dividing walls.

Item No.	Designation	Packing unit pieces/bag	Weight kg/piece
30318000	BLOCKER	50	0.790



RÜBO® vibrating beam holder

Vertically adjustable screed bracket, integrated in the reinforcement.
The RÜBO® plastic base with nail brackets prevents corrosion.
The RÜBO® head is reusable. Remove before the concrete sets.



Item No.	Designation	Packing unit	Weight kg
36156000	RÜBO® head, galvanized	50 pieces/bag	0.320/piece
36159999	RÜBO® rod length 6400 mm	piece	1.578/m
36158888	RÜBO® rod various dimensions + make-up supplement	meter	1.578/m
36120000	RÜBO® plastic base	100 pieces/bag	9.000/1000 pieces
36147000	Rectangular tube, galvanized	piece	2.160/m

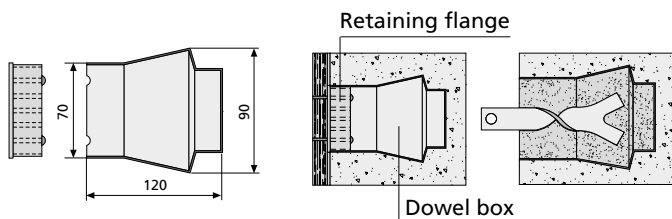
Rectangular tube: 40 x 20 x 2.5 x 6000 mm
Length (L) of RÜBO® rod = concrete thickness - 70 mm

Please request for installation guide.

Dowelbox

Leaves a conical hole in the concrete for inserting facade panel anchors, wall bolts etc.

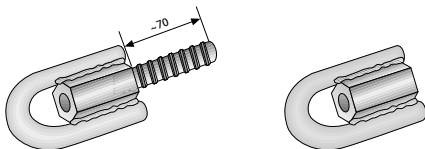
The thin-walled *dowel box* can easily be pulled out of the concrete with pliers when the shuttering is removed. The retaining flange is reusable.



Item No.	Designation	Packing unit pieces/bag	Weight kg/100 pcs.
74721280	Dowel box 12 cm	100	4.200
74720700	Retaining flange	100	1.460

Eye bolt B15 / Eye nut B15

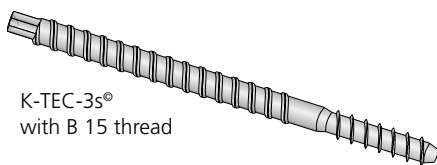
Fixing device with B15 threaded rod, galvanized.



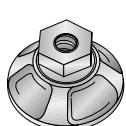
Item No.	Designation	Packing unit piece	Weight kg/piece
74101500	Eye bolt B15	1	0.750
74101510	Eye nut B15	1	0.560

K-TEC-3s® concrete anchor bolt

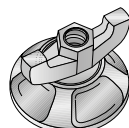
K-TEC-3s® of BETOMAX® systems is for multiple use and combines the advantages of a temporary machine fastening by means of a coarse thread with the advantages of a self-drilling concrete bolt.



K-TEC-3s®
with B 15 thread



Kipp B 15 round
with hex nut,
galvanized



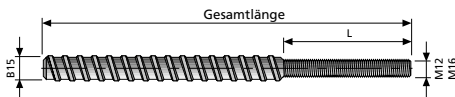
Kipp B 15 round
with wing nut,
galvanized

Item No.	Designation	Packing unit piece	Weight kg/piece
18602230	K-TEC-3s® B 15 B 12 x 10 / L = 230 mm	1	0.300
18602280	K-TEC-3s® B 15 B 12 x 10 / L = 280 mm	1	0.400
18602400	K-TEC-3s® B 15 B 12 x 10 / L = 400 mm	1	0.580
18602600	K-TEC-3s® B 15 B 12 x 10 / L = 600 mm	1	0.800
18602814	SDS hammer drill	1	0.110
18602700	K-TEC-3s® wear gauge, galvanized	1	0.040
20020940	Kipp B 15 round with hex nut, galvanized	1	0.780
20020950	Kipp B 15 round with hex nut, galvanized	1	0.680

Further closure means see *Anchoring technology* page 22

BETOMAX® 15 / M 12

BETOMAX® 15 tie rod with cold-rolled M 12 thread, e.g. for holding core drilling machines.



Working load: 40 kN
Breaking load: 71 kN
Shear load: 30 kN

Item No.	Length bar B 15	Length L thread M 12	Packing unit pieces	Weight kg/piece
18590610	250 mm	25 mm	50	0.292
18590611	250 mm	40 mm	50	0.292
18590614	250 mm	75 mm	50	0.292
18590615	250 mm	100 mm	50	0.292

BETOMAX® 15 with cold-rolled M 16 thread available on request.

Accessories: Screwed fastenings see *Anchoring technology* page 20

Drop-in anchor B 15 / M 12 / M 16

Universally useable drop-in anchor for tie rods for temporary fastening of machines formwork support on fall-protections in concrete on pressure-resistant natural stone.



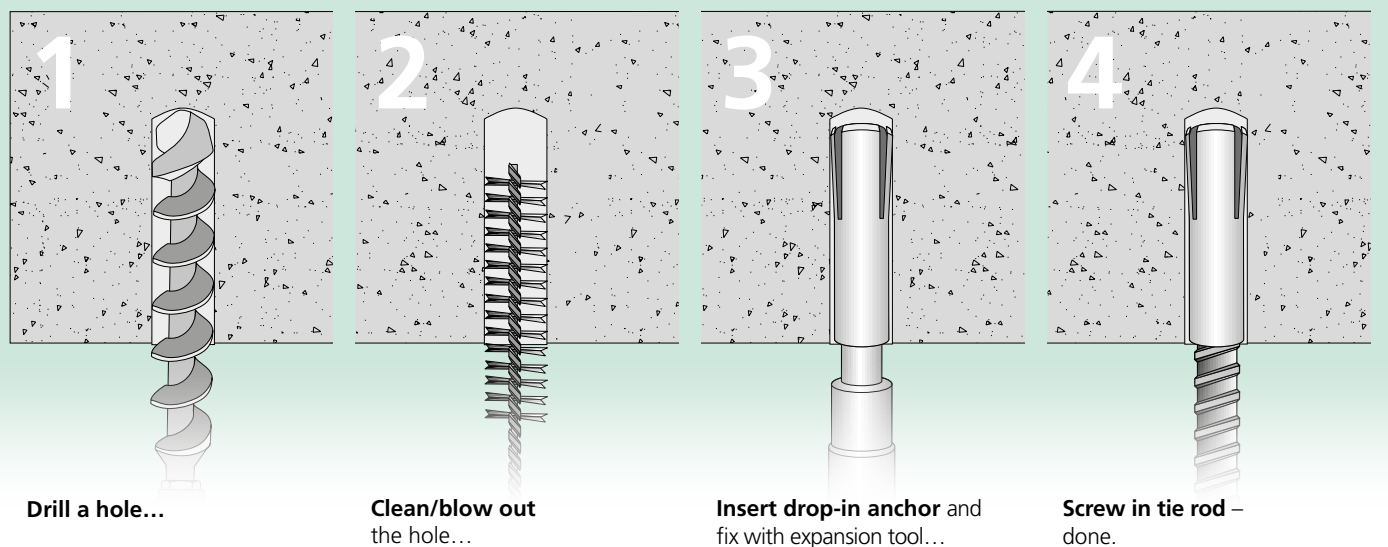
Item No.	Designation	Packing unit piece	Weight kg/piece
20491820	Drop-in anchor B 15	1	0.153
20491822	Drop-in anchor M 12	1	0.047
20491826	Drop-in anchor M 16	1	0.109
20491830	Expansion tool Drop-in anchor	1	0.424
18590610	BETOMAX 15 / M 12	1	0.292
18590616	BETOMAX 15 / M 16	1	0.390
20491832	SDS-Hammer drill 22 x 250 x 200	1	0.349

Loads / axial tension / concrete class C20/25 B 15 (kN) M 12 (kN) M 16 (kN)

Design load	19.30	7.10	10.50
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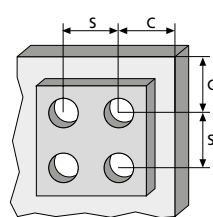
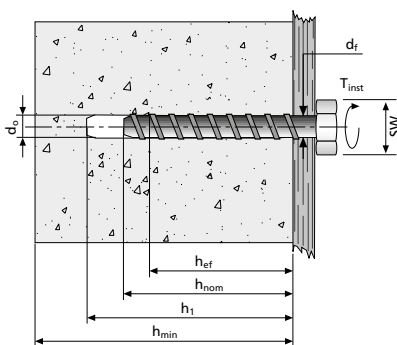
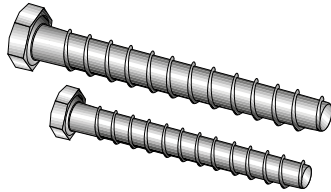
Further loads / Installation conditions see datasheet

Drop-in anchor B15 / M12 / M16 – universal application:



MULTI-MONTI® screw anchor

For securing guide posts and BETOMAX® kerb shuttering, galvanized.



Item No.	Designation	A/F	Packing unit pieces	Weight kg/piece
74416120	MULTI-MONTI screw anchor 16x120	24	10	0.180
74416140	MULTI-MONTI® screw anchor 16x140	24	10	0.210
74412080	MULTI-MONTI® screw anchor 12x80	18	25	0.140

Different diameters available on request.

Advantages

- Simple push-through installation and thereby:
- Enormous time and cost savings
- Easy to remove
- Multiple use for temporary fixings, e.g. erecting guide posts
- Safety tested in low-strength, undercured concrete

Permissible maximum loads for a single anchor plug for fastenings in cracked and noncracked concrete in accordance with ETA 05/0010 and ETA 05/0011.*

Anchor plug size		MMS-12x80	MMS-16x120
		gvz	gvz
Approval Notification No. ETA 05/		0010	0010
Largest permissible tensile load¹⁾ „N_{zul}“ for one anchor plug without rim effect¹⁾			
Cracked concrete C20/25 ³⁾	[kN]	4.9	12.1
Non-cracked concrete C20/25 ³⁾	[kN]	6.5	16.4
Largest permissible shearing force¹⁾ „V_{zul}“ for one anchor plug without rim effect²⁾			
Cracked concrete C20/25 ³⁾	[kN]	12.8 ⁵⁾	24.2 ⁵⁾
Non-cracked concrete C20/25 ³⁾	[kN]	12.8 ⁵⁾	24.2 ⁵⁾
Permissible bending moment¹⁾ „M_{zul}“			
	[Nm]	40.4	107.1
Component dimensions and installation parameters			
Nominal drill diameter	d ₀ = [mm]	10.0	14.0
Drill hole depth	h ₁ ≥ [mm]	85.0	130.0
Total anchoring depth	h _{nom} ≥ [mm]	75.0	115.0
Calculated anchoring depth	h _{ef} = [mm]	54.5	87.5
Min. axis distance	s _{min} = [mm]	60.0	100.0
Min. rim distance	c _{min} = [mm]	60.0	100.0
Min. component thickness	h _{min} = [mm]	125.0	180.0
Through-hole in component to be connected	d _f ≤ [mm]	14.0	18.0
Recommended max. tightening torque ⁴⁾	T _{inst} = [Nm]	55.0	110.0

* Please note that the entire approval notification must be observed when dimensioning sizes.

Remarques: ¹⁾ c ≥ 1.5 x h_{ef} and s ≥ 3 x h_{ef}

²⁾ c ≥ 10 x h_{ef}

³⁾ The concrete has been assumed to be normally reinforced. Accordingly greater resistances are possible with greater concrete strengths.

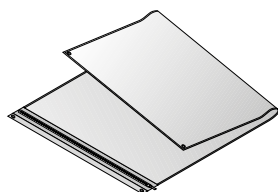
⁴⁾ The tightening torque has not been defined in the approval notification; adherence to this specification therefore bears no relevance to approval.

⁵⁾ Steel failure relevant

⁶⁾ The partial safety coefficients specified in the approval notifications for the anchor plug resistances and the partial safety coefficient for the effect of y₀ = 1.35 have been taken into account. Please observe the specifications for Design Method A set out in Appendix C of ETAG or our design aid in the event of combined loads and anchor plug groups as well as the effects of axes and rims.

Protective pouches

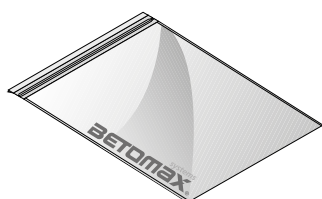
With zip / velcro fastener and eyelets. Protects important drawings and plans against water, soiling and damage. Resilient, tear-resistant plastic film. Durable metal zip fastener.



Item No.	Designation	Packing unit pieces/bag	Weight kg/piece
79900011	A 0 841 x 1189 mm	25	1.300
79900020	A 1 594 x 841 mm	25	0.700
79900038	A 2 420 x 594 mm	25	0.400

Drawing pouches

Drawing pouches with slide fastener. Lightweight, inexpensive design. Protects important drawings and plans against water, soiling and damage. Resilient, tear-resistant plastic film.

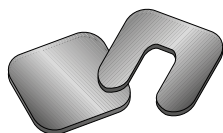


Item No.	Designation	Packing unit pieces/bag	Weight kg/piece
79900111	Drawing pouches A 0	20	0.250

Mounting bases

Plastic mounting bases with and without cutout. For placing underneath precast units, including in the vicinity of guide pins.

Dimensions:
70 mm x 70 mm



Item No.	Designation	Material thickness mm	Packing unit pieces/bag	Weight kg/piece
74206002	Mounting base w/o cutout 2 mm	2	100	0.010
74206003	Mounting base w/o cutout 3 mm	3	100	0.015
74206005	Mounting base w/o cutout 5 mm	5	100	0.024
74206007	Mounting base w/o cutout 7 mm	7	100	0.035
74206008	Mounting base w/o cutout 8 mm	8	100	0.039
74206009	Mounting base w/o cutout 9 mm	9	100	0.044
74206010	Mounting base w/o cutout 10 mm	10	100	0.050
74206015	Mounting base w/o cutout 15 mm	15	100	0.072
74206020	Mounting base w/o cutout 20 mm	20	100	0.095
75206002	Mounting base with cutout 2 mm	2	1000	0.008
75206003	Mounting base with cutout 3 mm	3	1000	0.012
75206005	Mounting base with cutout 5 mm	5	500	0.020
75206008	Mounting base with cutout 8 mm	8	300	0.038
75206010	Mounting base with cutout 10 mm	10	300	0.043

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Subject to technical change. 03 / 2019

