PEIKKO GROUP

PRODUCT CATALOGUE

01.04.2016

Peikko Group – Concrete Connections since 1965

PEIKKO GROUP CORPORATION

Peikko supplies a large selection of concrete connections and composite beams both for precast and cast-in-situ solutions in wide variety of applications. Peikko, founded in 1965, provides innovative solutions to help customers make their building process faster, easier and more reliable.

Our aim is to serve our customers locally with leading solutions in the field in terms of quality, safety, and innovation. Local sales contact information can be found on the last pages and on our website at www.peikko.com.

APPROVALS, PRODUCT TESTING AND QUALITY

There are more than 200 Technical Approvals, either country specific or ETA Approvals on the products. Detailed product specific approval information can be found in the product information of each product.

Peikko does not rely only on calculation models, but the products have been tested in leading universities and laboratories. During past five years, tests have been carried out in e.g. Czech Republic, Finland, Germany, Italy, Sweden and the UK.

The results of our quality and environment work are inspected regularly by external audits.

TECHNICAL INFORMATION

Detailed technical information and limitations for application, requirements for the concrete and correction factors for capacities can be found in the product's technical manual. The technical manuals are available on our website at www.peikko.com or as printed manuals on request.

GENERAL TERMS AND CONDITIONS OF SALE

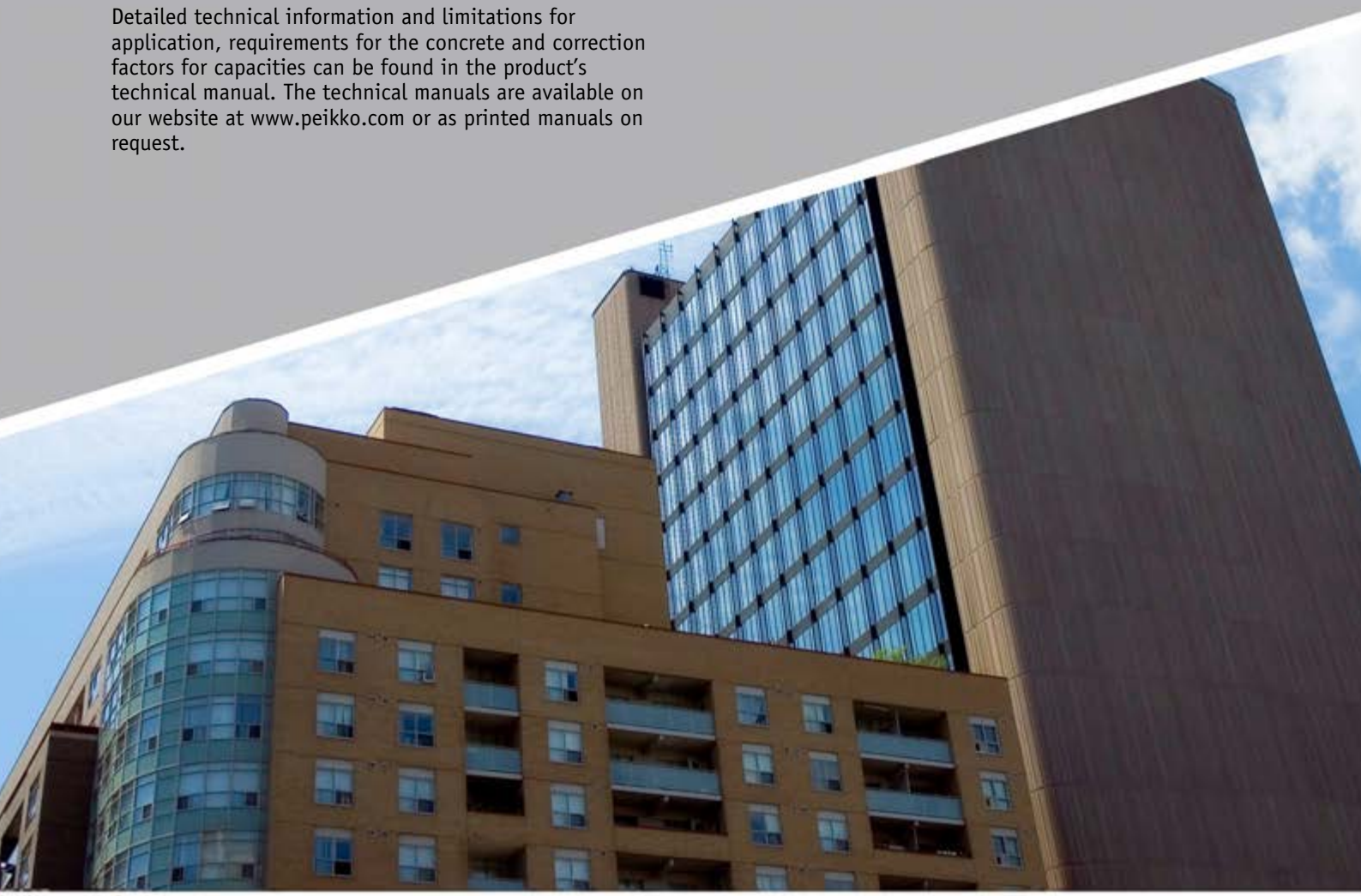
Peikko Group's general terms and conditions of sale can be found on the last pages of this Product Catalogue.

CONTACT INFORMATION

Contact information to local Peikko offices can be found on the last pages of this Product Catalogue and on our website at www.peikko.com

Peikko Group Corporation

P.O.Box 104
Voimakatu 3
FI-15101 Lahti, Finland
Tel. +358 20 707 511
Fax. +358 3 733 1138
www.peikko.com
peikko@peikko.com



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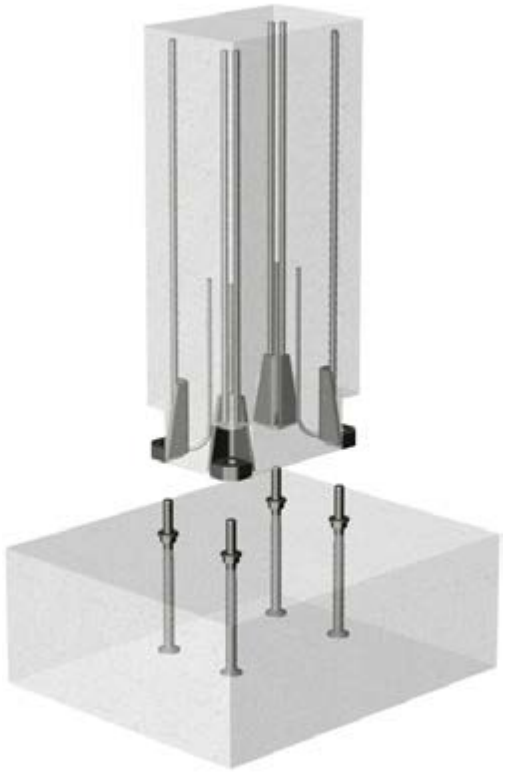
BOLT CONNECTIONS

Bolt connections are used for connecting load-bearing precast structures, such as columns, beams and walls to other elements and foundations. The Peikko bolt connection enables an easy, fast and accurate installation. It is possible to adjust structures at the correct level and vertical position. Connections can be planned to be carried out without propping during installation. Connections will reach their final strength after grouting.

Bolt connection capacities are defined by the bolts used in the connection. The Peikko Designer®; Column Connection module enables simple and reliable dimensioning of bolt connections. Peikko Designer® is available free of charge on Peikko's website.



ANCHOR BOLTS

Short stud-headed anchor bolts (type L) are principally used as basic bolts. Long Anchor Bolts (type P) are used in splices of precast elements. Rebar HPM Anchor Bolts are made of steel wire and Strong PPM Anchor Bolts from high strength steel. Bolts without surface treatment are placed within the concrete structure where the concrete covering protects the bolts against corrosion. ECO galvanized and hot dip galvanized bolts are available for applications requiring corrosion protection. If required, we also manufacture bolts to special measurements. An installation template enables accurate installation of bolts.

Peikko's range also includes high-strength bolts (FatBar) for foundations of wind turbines, lines and chimney hoods as well as for other demanding constructions.

HPM Rebar Anchor Bolt

HPM Rebar Anchor Bolts transfer tension, compression and shear forces to the reinforced concrete base structure e.g. foundation. There are two main anchor types:

- Long Anchors which are used for splices
- Short Anchors with headed studs which are used for anchoring

The Long Anchor bolts transfer the compression and tension forces through the bond of the ribs of ribbed bars. The Short Anchor bolts transfer the forces through the combination of headed studs and bond of the ribs.

Anchor Bolts are suitable for different environmental conditions, and available in black steel, ECO & Hot-Dip Galvanized versions.

The HPM Rebar Anchor Bolt as a steel part cast into concrete is designed according to Eurocodes or ACI 318M-11. Headed HPM-L Anchor Bolts have been ETA approved (ETA-02/0006).

Approvals

ETA *(HPM L)*: ETA-02/0006 (en, pl)
Finland: BY 5 B N:o 359 M1
Germany: Z-30.6-39
Hungary: A-744/2/2007
Netherlands: K65974/01
Poland: AT-15-5060/2009
Russia: РОСС FI.АВ28.Н15900
Slovakia: TO-09/0150 *(HPM P)*
Turkey: No. 802

CE Marking

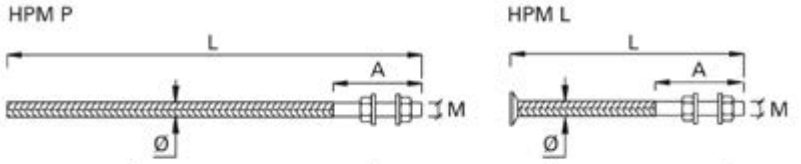
HPM-L

Materials

	material	standard
Ribbed bars, alternatives	Grade 60	ASTM A615M
	B500B	EN 10080
	HRB 500	GB 1499
Washers	S355J2 + N	EN 10025-2
Nuts	Property class 8	EN ISO 4032 / DIN 934

Standard delivery for each anchor bolt includes two hexagonal nuts and two washers.
NOTE: alternative materials of washers and nuts can be supplied on request.

Dimensions



	M	A	Ø	washer	HPM P		HPM L		color
			[mm]		L	[kg]	L	[kg]	
HPM 16	16	140	16	Ø 40-6	810	1,5	280	0,7	
HPM 20	20	140	20	Ø 44-6	1000	2,8	350	1,2	
HPM 24	24	170	25	Ø 56-6	1160	4,9	430	2,2	
HPM 30	30	190	32	Ø 65-8	1420	9,8	500	4,1	
HPM 39	39	200	40	Ø 90-10	2000	21,8	700	9,2	

Resistances

RESISTANCES of HPM Rebar Anchor Bolt, ETA version

RESISTANCES of HPM Rebar Anchor Bolt, ACI version

PPM High-Strength Anchor Bolt

PPM High-Srength Anchor Bolts transfer tension, compression and shear forces to the reinforced concrete base structure e.g. foundation. There are two main anchor types:

- Long anchors which are used for splices
- Short anchors with headed studs which are used for anchoring

Long anchor bolts variants transfer the compression and tension forces through the bond of the ribs of ribbed bars. The short anchor bolt variants transfer the forces through the combination of headed studs and bond of the ribs. Bolts are color coded with same color as matching shoe types.

Approvals

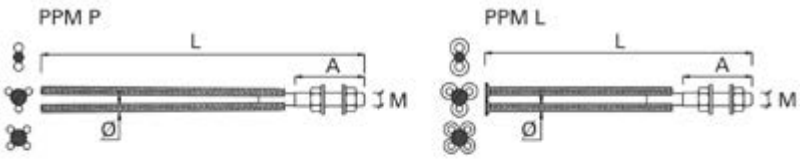
Finland: BY 5 B N:o 359 M1
Germany: Z-30.6-39 (PPM P)
Germany: Z-21.5-1706 (PPM L)
Hungary: A-744/2/2007
Poland: AT-15-5060/2009
Russia: РОСС FI.AB28.H15900
Slovakia: TO-09/0150
Turkey: No. 802

Materials

	material	standard
Ribbed bars	B500B	EN 10080
Threaded bars	High strength steel, property class 8.8	$f_{yk} \geq 640$ MPa $f_{tk} \geq 800$ MPa Mechanical properties according to EN ISO 898-1
Washers	S355J2 + N	EN 10025 / DIN 7349
Nuts	Property class 10	EN ISO 4032 / EN ISO 898-2

Surface coating options available: Hot Dip Galvanizing (Zn, EN ISO 1461) and ECO Galvanizing (Zn, EN ISO 2063)

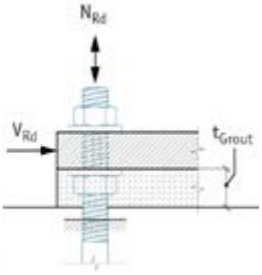
Dimensions



	M	A	Ø [mm]	washer	PPM P L	PPM P [kg]	PPM L L	PPM L [kg]	color
PPM 30	30	190	2Ø25	Ø 65-8	1705	14,1	670	6,2	
PPM 36	36	190	4Ø20	Ø 80-8	1450	16,0	740	9,4	
PPM 39	39	190	3Ø25	Ø 90-10	1815	23,5	880	12,7	
PPM 45	45	220	4Ø25	Ø 100-10	1825	31,4	980	18,6	
PPM 52	52	250	4Ø32	Ø 100-12	1930	52,1	1140	32,6	
PPM 60	60	310	4Ø32	Ø 115-15	2490	71,0	1330	42,0	-

Resistances

	N_{Rd} (ETAG 001)	V_{Rd} (EN 1993-1-8) Final Stage	$V_{Rd,0}$ (EN 1993-1-8) Erection Stage	t_{Grout}
	[kN]	[kN]	[kN]	[mm]
PPM 30	299	89	53	50
PPM 36	436	130	88	55
PPM 39	521	155	104	60
PPM 45	697	207	144	65
PPM 52	938	219	215	70
PPM 60	1260	225	225	80



NOTE 1: Resistances V_{Rd} and $V_{Rd,0}$ are valid for height of joint equal to t_{Grout}.
NOTE 2: The effect of combined tension and shear must be checked where necessary.
NOTE 3: The base plate design must meet the requirements for the anchor bolt capacity.

COPRA Anchoring Coupler

The COPRA Anchoring Coupler is a rebar anchor with female threads for bolted connections in precast concrete structures. COPRA Anchoring Couplers transfer tensile, compression, and shear forces through the connection during erection and in the final stage. COPRA can be adapted to all types of concrete structures.

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

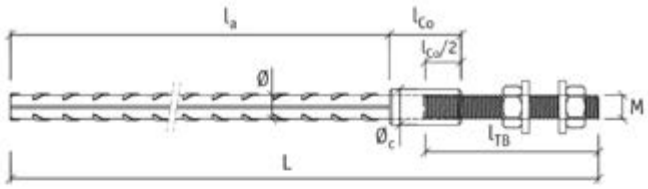
Materials

part		material	standard
Coupler		S355J2	EN 10025-2
Ribbed bar		B500B	EN 10080-1
Threaded bar	(load class H)	8.8	EN ISO 898-1
	(load class P)	High strength steel, property class 8.8 f_{yk} ≥ 640MPa f_{uk} ≥ 800MPa	Mechanical properties according to EN ISO 898-1
Washer		S355J2+N	EN 10025-2
Nut	(load class H)	Property class 8	EN ISO 4032/EN ISO 898-2
	(load class P)	Property class 10	

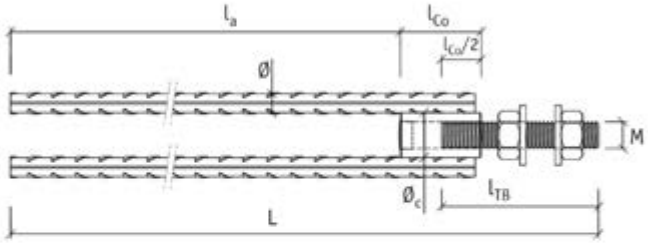
Dimensions

COPRA P

Load class H



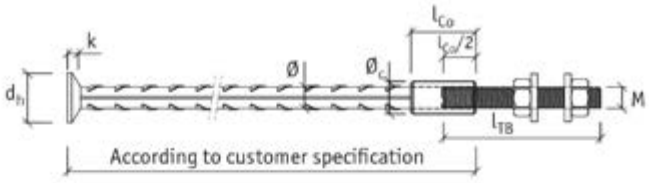
Load class P



	M	l_{TB}	l_{Co}	$Ø_c$	Ø	l_a	L	Weight	Color
				[mm]				[kg]	
COPRA 16H	M16	130	48	25	Ø16	816	970	1.86	Yellow
COPRA 20H	M20	145	60	30	Ø20	1140	1315	3.77	Blue
COPRA 24H	M24	166	72	35	Ø25	1224	1426	6.31	Gray
COPRA 30H	M30	195	90	50	Ø32	1455	1695	12.53	Green
COPRA 39H	M39	245	120	65	Ø40	2390	2695	31.05	Orange
COPRA 30P	M30	195	90	50	2Ø25	1245	1483	13.32	Black
COPRA 36P	M36	220	108	60	2Ø28	1692	1966	22.50	Red
COPRA 39P	M39	245	120	65	2Ø28	1990	2295	27.15	Brown
COPRA 45P	M45	263	135	75	2Ø32	2265	2595	40.14	Purple
COPRA 52P	M52	320	160	90	4Ø32	1500	1900	57.39	White

COPRA L

Load class H



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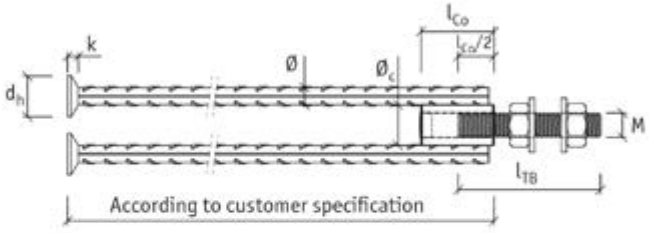
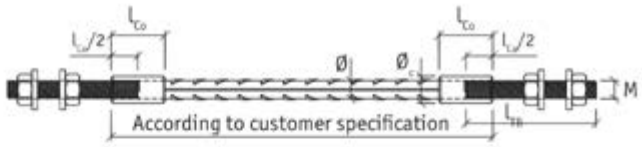


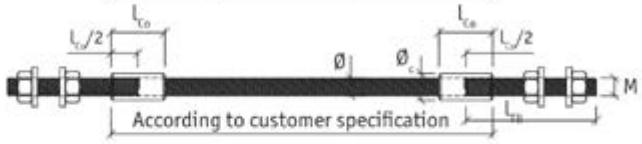
	M	l_{TB}	l_{Co}	$Ø_c$	Ø	d_h	k	Color
				[mm]				
COPRA 16H	M16	130	48	25	Ø16	38	10	Yellow
COPRA 20H	M20	145	60	30	Ø20	46	12	Blue
COPRA 24H	M24	166	72	35	Ø25	55	13	Gray
COPRA 30H	M30	195	90	50	Ø32	70	15	Green
COPRA 39H	M39	245	120	65	Ø40	90	18	Orange
COPRA 30P	M30	195	90	50	2Ø25	55	13	Black
COPRA 36P	M36	220	108	60	2Ø28	84	20	Red
COPRA 39P	M39	245	120	65	2Ø28	84	20	Brown
COPRA 45P	M45	263	135	75	2Ø32	70	15	Purple
COPRA 52P	M52	320	160	90	4Ø32	70	15	White

COPRA D

Load class H



Load class P



	M	l_{TB}	l_{co}	$Ø_c$	Ø	Color
			[mm]			[mm]
COPRA 16H	M16	130	48	25	16	Yellow
COPRA 20H	M20	145	60	30	20	Blue
COPRA 24H	M24	166	72	35	25	Gray
COPRA 30H	M30	195	90	50	32	Green
COPRA 39H	M39	245	120	65	40	Orange
COPRA 30P	M30	195	90	50	30	Black
COPRA 36P	M36	220	108	60	36	Red
COPRA 39P	M39	245	120	65	39	Brown
COPRA 45P	M45	263	135	75	45	Purple
COPRA 52P	M52	320	160	90	52	White

NOTE 1: Lap lengths of anchor bars are calculated for concrete grade C25/30 in good bond condition.

NOTE 2: The total length of the headed anchoring bars should be defined according to the dimensions of the concrete member and verified according to CEN/TS 1992-4-2.

NOTE 3: The total length of the double-sided COPRA Anchoring Coupler should be defined according to the dimensions of the concrete member.

Resistances

		COPRA					COPRA				
		16H	20H	24H	30H	39H	30P	36P	39P	45P	52P
N_{Rd} $N_{Rd,0}$	[kN]	62	96	139	220	383	299	436	521	697	938
Erection Stage $V_{Rd,0}$	[kN]	5	10	18	37	72	53	88	104	144	215
Final Stage V_{Rd}	[kN]	20	31	45	72	125	89	130	155	207	219
t_{Grout}	[mm]	50	50	50	50	60	50	55	60	65	70

Wall Shoe Anchor Bolts

Wall Shoe Anchor Bolts transfer tension, compression and shear forces to the reinforced concrete base structure e.g. foundation. The bolts are based on standard HPM and PPM anchor bolt types and they are delivered with specially designed AL wall shoe washers. There are two main anchor types:

- Long Anchors which are used for splices
- Short Anchors with headed studs which are used for anchoring

The Long Anchor bolts transfer the compression and tension forces through the bond of the ribs of ribbed bars.
The Short Anchor bolts transfer the forces through the combination of headed studs and bond of the ribs. Bolts are color coded with same color as matching shoe types.

Materials

	material	standard
Ribbed bars	B500B	EN 10080
Washers	S355J2 + N	EN 10025
Nuts	Property Class 8	EN ISO 4032

Dimensions

Wall Shoe Bolt	Bolt L	Bolt A	Bolt Ø	Bolt C	AL-washer e	AL-washer s	weight	Color
	[mm]						[kg]	
HPM 16L + AL16	280	140	16	65	5	12	0,9	
HPM 16P + AL16	810	140	16	65	5	12	1,7	
HPM 20L + AL20	350	140	20	70	5	15	1,6	
HPM 20P + AL20	1000	140	20	70	5	15	3,1	
HPM 24L + AL24	430	170	25	80	10	20	2,8	
HPM 24P + AL24	1160	170	25	80	10	20	5,6	
HPM 30L + AL30	500	190	32	95	10	25	5,2	
HPM 30P + AL30	1420	190	32	95	10	25	10,9	
HPM 39L + AL39	700	200	40	115	10	30	10,7	
HPM 39P + AL39	2000	200	40	115	10	30	23,4	
PPM 30L + AL30	670	190	2Ø25	95	10	25	7,0	
PPM 30P + AL30	1705	190	2Ø25	95	10	25	14,9	
PPM 36L + AL36	740	190	4Ø20	110	10	30	11,0	
PPM 36P + AL36	1450	190	4Ø20	110	10	30	17,8	
PPM 39L + AL39	880	190	3Ø25	115	10	30	13,8	
PPM 39P + AL39	1815	190	3Ø25	115	10	30	24,5	
PPM 45L + AL45	980	220	4Ø25	130	10	35	21,2	
PPM 45P + AL45	1825	220	4Ø25	130	10	35	34,0	
PPM 52L + AL52	1140	250	4Ø32	155	10	40	37,0	
PPM 52P + AL52	1930	250	4Ø32	155	10	40	56,5	

Wall Shoe Bolt		N_{Rd} (ETAG 001) [kN]	Color
HPM 16L + AL16	HPM 16P + AL16	62	
HPM 20L + AL20	HPM 20P + AL20	96	
HPM 24L + AL24	HPM 24P + AL24	139	
HPM 30L + AL30	HPM 30P + AL30	220	
HPM 39L + AL39	HPM 39P + AL39	383	
PPM 30L + AL30	PPM 30P + AL30	299	
PPM 36L + AL36	PPM 36P + AL36	436	
PPM 39L + AL39	PPM 39P + AL39	521	
PPM 45L + AL45	PPM 45P + AL45	697	
PPM 52L + AL52	PPM 52P + AL52	938	

Anchor Bolt Surface Coating Options

Peikko anchor bolts are available with alternative protective coatings. Standard coating options for anchor bolts are described below. If other type of protection against corrosion, like electro-zinc-plating or stainless steel is needed, please contact your local Peikko sales office for more information.

Standard Coating Options

ECO Galvanizing

Peikko's ECO Galvanizing is an economic and ecological surface coating which allows anchor bolts to be galvanized partly or completely. The coating method is thermally sprayed zinc coating (according to EN ISO 2063). Minimum coating thickness is 100 µm which corresponds to the performance of hot-dip galvanizing. Coating fulfills environmental class C3 of standard EN 9223-1002.

ECO Galvanizing is available for Anchor Bolt models **HPM 24 - 39** and **PPM 30 - 52**.

How to order ECO Galvanized bolts? Just add -ECO after the regular bolt name:
HPM24P-ECO

Read more on ECO Galvanizing

Hot-Dip Galvanizing

Hot-Dip Galvanized (according to EN ISO 1461) anchor bolts are dipped into galvanized material completely. Method is suitable for HPM and PPM anchor bolts. Minimum coating thickness is 55 µm which fulfills environmental class C3 of standard EN 9223-1002.

How to order Hot-Dip Galvanized bolts? Just add -HDG after the regular bolt name:
PPM30L-HDG

PPL Bolt Installation Template

Peikko PPL Bolt Installation Template is a steel plate for installing bolts accurately into castings. Bolts are accurately positioned and fixed into the mould with PPL Bolt Installation Template. Anchor bolts are fixed through the holes on the template with bolt's nuts and washers. PPL Bolt Installation Template can be secured with nails to the supporting base by its nailing recesses at the sides. PPL Bolt Installation Template has alignment marks for accurate positioning of the anchor bolt group to the module line. Bolts can be adjusted and tightened to the correct level.

PPL Bolt Installation Templates are used with HPM and PPM Anchor Bolts.

Dimensions

PPL Bolt Installation Templates are manufactured to given specifications. Please see product information leaflet.

FATBAR Post-Tensioned Anchor

Peikko is proud to introduce its latest innovation in anchoring technology for wind turbine towers: The FATBAR! Its unique design enables it to sustain greater fatigue loads, which increases the life span of turbine foundations.

FATBAR Post-Tensioned Anchors are assembled with DIN 6319 washers class 10 and DIN 6330 B nuts class 10. Bolt threads are cold-rolled with special threading for fatigue loading. The bolts are produced according EN 898-1 to class 10.9.

Approvals

ETA: 10/0246

Dimensions

FatBars are available in lengths up to 6000 mm. Diameters can be chosen between 36 and 39 mm. For other sizes please contact us.

Resistances

	Nominal bar diameter d [mm]	Characteristic value of maximum force F_{pk}	Characteristic value of 0,1 % proof force $F_{p0,1k}$ [kN]	Maximum prestress force* F_0
FatBar 36	36	1070	960	856
FatBar 39	39	1255	1127	1004

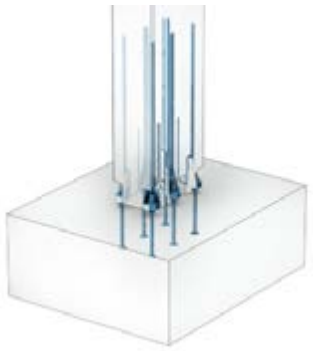
Heavy Duty Bolts

Peikko Peikko Heavy Duty Bolts are assembled using EN 14399-6 washers class 10 and EN 4032 nuts class 10. Peikko offers choices of PVC sleeve or grease tape protection for a reliable post tension solution.

Resistances

	Thread	Nominal stress area [mm²]	Proof load	EC 3: EN 1993-1-8	Ultimate Strength 1000 N/mm²	Yield Strength 900 N/mm²	Weight [kg/m]
			[kN]				
10,9 M20	M20-2.5	245	203,0	176,4	245,0	220,5	2,5
10.9 M22	M22-2.5	303	252,0	218,2	303,0	272,7	3,0
10.9 M24	M24-3	353	293,0	254,2	353,0	317,7	3,6
10.9 M27	M27-3	459	294,0	330,5	459,0	413,1	3,9
10.9 M30	M30-3.5	561	466,0	403,9	561,0	504,9	5,5
10.9 M33	M33-3.5	694	576,0	499,7	694,0	624,6	6,7
10.9 M36	M36-4	817	678,0	588,2	817,0	735,3	8,0
10.9 M39	M39-4	976	810,0	702,7	976,0	878,4	9,4
10.9 M42	M42-4.5	1121	930,4	807,1	1121,0	1008,9	10,9
10.9 M45	M45-4.5	1306	1084,0	940,3	1306,0	1175,4	12,5
10.9 M48	M48-5	1478	1226,7	1064,2	1478,0	1330,2	14,2
10.9 M52	M52-5	1758	1570,4	1265,8	1758,0	1582,2	16,7
10.9 M56	M56-5	2016	1673,3	1451,5	2016,0	1814,4	19,3

COLUMN SHOES



HPKM® Column Shoes are designed to correspond with the resistance of HPM Bolts, and, correspondingly, PEC Column Shoes correspond with the resistance of PPM Bolts. Shoes are available both with a fixed and removable recess box.

The number of column shoes to be used depends on, e.g. the dimensions of the column cross section, the strength of the concrete and the loads on the cross section. In general, four column shoes at the bottom of the column suffice to achieve a moment-stiff connection. Peikko's Column Shoes are also approved to be used in areas prone to earthquakes.

HPKM Column Shoe

HPKM® Column Shoes are construction products used to create cost-effective, moment-resisting, stiff connections between precast concrete columns and foundations, or between precast concrete columns. They are also used to resist loads during the erection stage so temporary bracing is not normally needed.

The column connection is made by the column shoes and anchor bolts. The column shoes are cast into precast concrete columns, while the anchor bolts are cast into the foundations or into another column (column splice). On the construction site, the columns are erected on the anchor bolts and adjusted to the correct level and vertical position. Fixing is achieved by tightening nuts onto the anchor bolts. The joint between the column and the structure below should be grouted before the column is loaded. After the grout has hardened, the joint behaves as a reinforced concrete structure.

HPKM® Column Shoe connection has been ETA approved (ETA-13/0603). It can also be designed according to ACI 318M-11. The HPKM® Column Shoe as a steel part cast into concrete is designed according to Eurocodes or ACI 318M-11.

Materials, Dimensions and Resistances

HPKM® Column Shoe, ETA version

HPKM® Column Shoe, ACI version

Approvals

ETA: ETA-13/0603 (en, pl)
Finland: BY 5 B-EC 2 N:o 39 *(HPKM-X)*
Germany: S/N 120397
Hungary: A-744/2/2007
Netherlands: KOMO® K65974/02
Poland: AT-15-5061/2013
Russia: POCC FI.AB28.H16302
Slovakia: TO-09/0150
Turkey: No. 802

CE Marking

PEC Column Shoe

PEC column shoes are fastening items which are used for moment stiff connections and splices between precast concrete columns and for example foundations. They are also used to resist loads during erection stage and thus temporary bracing is normally not needed.

A column is fixed to anchor bolts which are cast into the structure below the column. Fixing is achieved with nuts and washers screwed to the anchor bolts. It is also possible to adjust the column at the correct level and vertical position. The joint between column base and structure below should be grouted before loading the column. After grout is hardened, the joint works as reinforced concrete structure. Shoes are color coded with same color as matching anchor bolts and recess boxes.

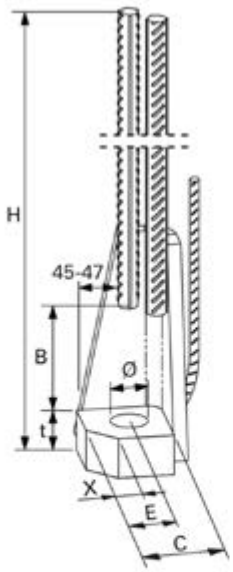
Approvals

Finland: BY 5 B-EC 2 n:o 38 *(EC 2 NA)*
Finland: BY 5 B-EC 2 N:o 39 *(PEC-X)*
Hungary: A-744/2/2007
Poland: AT-15-5061/2013
Russia: POCC FI.AB28.H16302
Slovakia: TO-09/0150
Turkey: No. 802

Materials

	material	standard
Steel plates	S355J2+N	EN 10025-2
Ribbed bars	B500B	EN 10080, DIN 488-1

Dimensions



	B	C	E	H [mm]	t	Ø	X	weight [kg]	color
PEC 30	130	105	50	1430	45	45	30	19,1	
PEC 36	170	115	60	1855	50	55	37	30,2	
PEC 39	195	130	60	2150	60	55	37	38,2	
PEC 45	190	145	60	2490	60	65	37	63,1	
PEC 52	175	155	60	2695	70	70	37	96,9	

Resistances

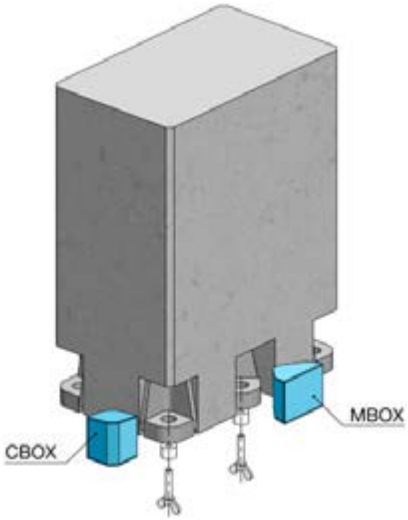
Column Shoe	**Bolt**	color	concrete grade C 30/37 ETAG 001 [kN]
PEC 30	PPM 30		299,2
PEC 36	PPM 36		435,7
PEC 39	PPM 39		520,5
PEC 45	PPM 45		696,5
PEC 52	PPM 52		937,6

Recess Boxes

Recess Boxes are Fixing Accessories which are used to form recess in concrete column for anchor bolts. There are two main types:

- CBOX is used with Column Shoes fixed in corner of the column
- MBOX is used with Column Shoes fixed in middle of the column

Recess Boxes are color coded with same color as matching Column Shoes and Anchor Bolts.



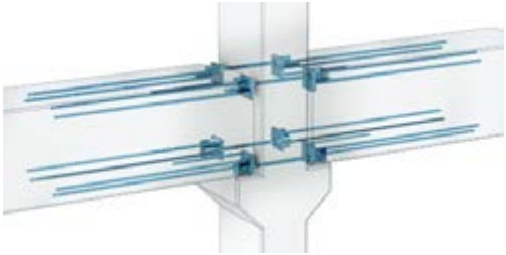
Dimensions

	corner recess	middle recess	fixing screw	color
HPKM 16 -	CBOX	MBOX	M16	
HPKM 20 -	CBOX	MBOX	M16	
HPKM 24 -	CBOX	MBOX	M16	
HPKM 30 -	CBOX	MBOX	M16	
HPKM 39 -	CBOX	MBOX	M16	
PEC 30 -	CBOX	MBOX	M16	
PEC 36 -	CBOX	MBOX	M16	
PEC 39 -	CBOX	MBOX	M16	
PEC 45 -	CBOX	MBOX	M16	
PEC 52 -	CBOX	MBOX	M16	

Product code e.g. **HPKM 24 - MBOX**

BEAM SHOES

Beam Shoes are used in precast frames to provide a moment-stiff connection between columns and beams. Typical applications include heavy frames of industrial constructions and sports centers.



BECO Beam Shoe

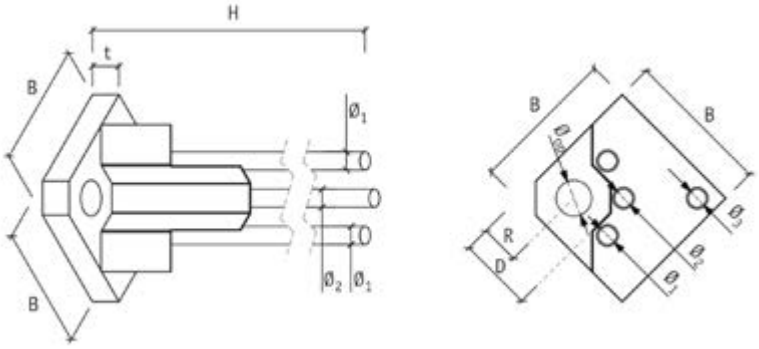
BECO Beam Shoes are construction products used to create cost-effective, moment-resisting connections between precast concrete columns and precast concrete beams.

The beam-to-column connection is made by beam shoes and anchoring couplers. The beam shoes are cast into precast concrete beams, while anchoring couplers are cast into columns. On the construction site, the beams are erected on corbels, adjusted to the correct positions, and fixed to the anchoring couplers with the help of threaded bars. The joint between the beam and the column should be grouted before the beam is loaded. After the grout has hardened, the joint behaves as a reinforced concrete structure.

Materials

part	material	standard
Steel plates	S355J2+N	EN 10025-2
Ribbed bars	B500B	EN 10080

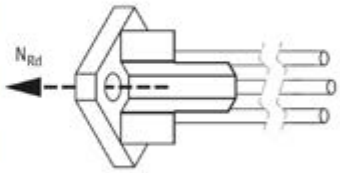
Dimensions



Beam Shoe	B	H	t	R	Ø1	Ø2	Ø3	Øop	Weight	Color code
	[mm]								[kg]	
BECO 16H	115	925	15	50	12	-	10	27	3.5	Yellow
BECO 20H	125	1080	20	50	16	-	12	30	6.2	Blue
BECO 24H	140	1220	25	50	20	-	16	35	10.3	Gray
BECO 30H	150	1620	35	50	25	-	20	40	19.6	Green
BECO 39H	190	2240	45	60	32	-	28	55	43.9	Orange
BECO 30P	160	1850	40	50	28	-	20	40	27.0	Black
BECO 36P	200	2320	50	60	32	-	28	50	47.2	Red
BECO 39P	225	2100	50	60	28	28	28	55	52.0	Brown
BECO 45P	260	2390	60	60	32	32	32	60	79.6	Purple
BECO 52P	290	3130	80	60	40	32	32	70	133.3	White

Resistances

Beam Shoe	Anchoring Coupler	N_{Rd} [kN]
BECO 16H	COPRA 16H-...*	62
BECO 20H	COPRA 20H-...*	96
BECO 24H	COPRA 24H-...*	139
BECO 30H	COPRA 30H-...*	220
BECO 39H	COPRA 39H-...*	383
BECO 30P	COPRA 30P-...*	299
BECO 36P	COPRA 36P-...*	436
BECO 39P	COPRA 39P-...*	521
BECO 45P	COPRA 45P-...*	697
BECO 52P	COPRA 52P-...*	938



RBC Beam Shoe

RBC Beam Shoes are fastening items for moment stiff connections between precast concrete beams and columns. The connection system consists of the beam shoes fitted in the beam and anchor bolts fitted in the column or wall.

Fixing is achieved with nuts and washers screwed to the anchor bolts. The joint between beam end and vertical structure should be grouted before loading the beam. After grout is hardened, the joint works as reinforced concrete structure. Shoes are color coded with same color as matching anchor bolts.

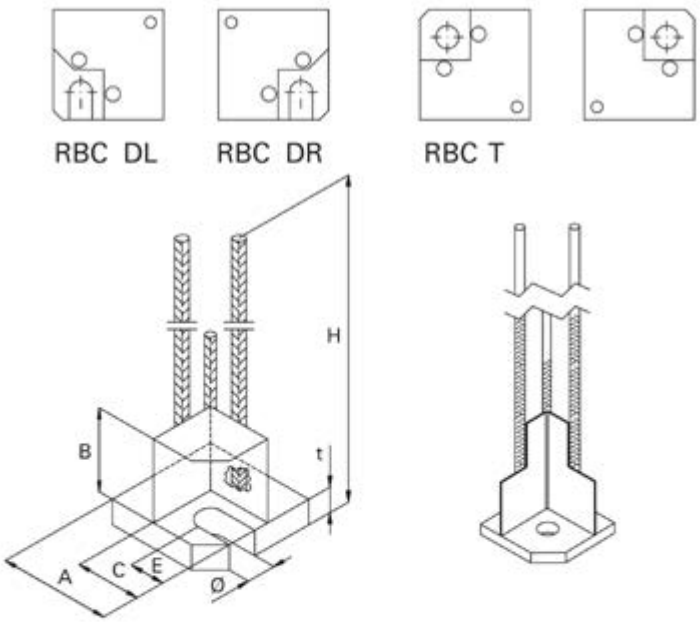
Approvals

Hungary: A-744/2/2007
Romania: 007-01/163-2009
Russia: РОСС FI.AB28.H16302
Slovakia: TO-09/0150

Materials

	material	standard
Plates	S355J2+N	EN 10025
Sheet metal	S235JR	EN 10025
Ribbed bars	B500B BSt 500S	EN 10080 DIN 488

Dimensions



	A	B	C	E	H	Ø	t	weight [kg]	color
				[mm]					
RBC 16	115	80	80	50	850/1159*	27	15	4,0	
RBC 20	130	90	80	50	980/1352*	30	20	7,5	
RBC 24	150	90	85	50	1085/1489*	35	25	12,6	
RBC 30	155	100	90	50	1490/2067*	40	35	24,5	
RBC 36	195	110	110	60	2280/3180*	50	50	60,8	
RBC 45	240	125	125	60	2320	60	60	80,0	
RBC 52	290	150	135	60	2670	70	80	125,3	

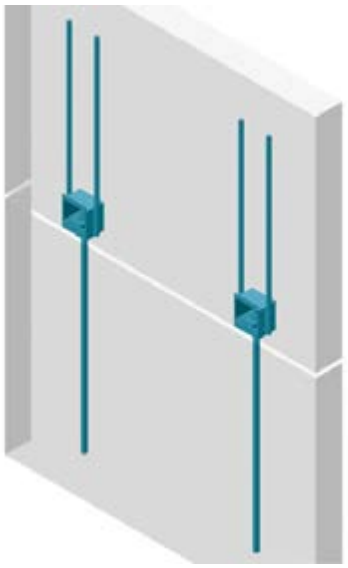
* The longer lenghts are to be used in poor bond condition

Resistances

Beam Shoe	Bolt + required washer	color	ETAG 001 concrete grade C 30/37 [kN]
RBC 16	HPM 16 + R 16		61,7
RBC 20	HPM 20 + R 20		96,3
RBC 24	HPM 24 + R 24		138,7
RBC 30	HPM 30 + R 30		220,4
RBC 36	PPM 36 + R 36		435,7
RBC 45	PPM 45 + R 45		696,5
RBC 52	PPM 52 + R 52		937,6

WALL SHOES

Wall Shoes are used in tension splices of stiffening precast staircases, elevator shafts or other walls structures. Special Reinforced Washers (AL) are used for bolts in wall shoe connections.



SUMO Wall Shoe

SUMO Wall Shoes are fastening items which are designed for tension splices of wall-like precast concrete elements. Wall shoes are used in e.g. building's stiffening structures like core walls and elevator shafts. The loads are transferred from wall to foundations or other load bearing structures with the help of wall shoes, anchor bolts and walls' reinforcement. Fixing is done with nuts and special AL washers as a bolt connection. SUMO Wall Shoes are color coded with same color as matching anchor bolts.

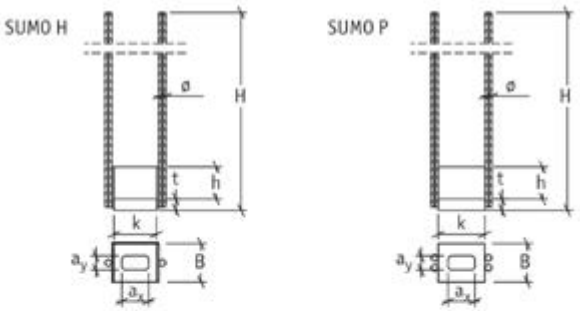
Approvals

Finland: BY 5 B-EC 2 N:o 10
Russia: РОСС FI.АВ28.Н16302

Materials

	material	standard
Steel plates	S355J2+N	EN 10025-2
Ribbed bars	B500B	EN 10080, DIN 488

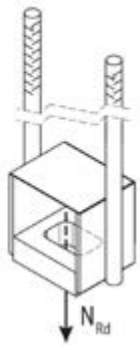
Dimensions



Wall Shoe	B	k	t	h	H	a_y	a_x	Ø	weight	color
	[mm]								[kg]	
SUMO 16H	80	115	30	80	580	36	76	14	3.9	
SUMO 20H	90	120	35	90	850	40	80	16	6.0	
SUMO 24H	110	135	35	100	960	49	84	20	9.6	
SUMO 30H	120	140	40	115	1170	55	90	25	15.2	
SUMO 39H	145	165	50	130	1590	64	99	28	26.7	
SUMO 30P	130	145	45	120	1350	55	90	28	21.3	
SUMO 36P	150	160	55	130	1755	61	96	32	35.1	
SUMO 39P	150	165	60	145	1820	64	99	28	46.2	
SUMO 45P	180	175	70	160	2015	75	105	32	66.9	
SUMO 52P	230	250	80	185	2590	82	112	32	100.4	

Resistances

			ETAG 001 concrete grade C25/30
Wall Shoe	Anchor Bolt	Washer	N_{Rd} [kN]
SUMO 16H	HPM 16	AL 16	62
SUMO 20H	HPM 20	AL 20	96
SUMO 24H	HPM 24	AL 24	139
SUMO 30H	HPM 30	AL 30	220
SUMO 39H	HPM 39	AL 39	383
SUMO 30P	PPM 30	AL 30	299
SUMO 36P	PPM 36	AL 36	436
SUMO 39P	PPM 39	AL 39	521
SUMO 45P	PPM 45	AL 45	697
SUMO 52P	PPM 52	AL 52	938



FASTENING PRODUCTS

Fastening products are used in concrete structure welding. Welding can be used to joint precast concrete elements together or steel structures to concrete structures. Welding is carried out on a steel plate or angle bar anchored on the surface of the concrete structure. Peikko's product range includes a wide selection of different standard Fastening Products. The products are tested, approved and, in terms of load resistance, designed according to Eurocodes. If required, we also manufacture fastening products to special measurements.

FASTENING PLATES

Fastening plates are specially designed steel parts that enable welded connections into concrete surface. They transfer loads from the structures welded to the plate to the concrete structure via plate specific anchors.

Peikko offers world's widest collection of standardized fastening plates in full range of steel grades, approvals, capacities, sizes and shapes. Fastening plates can also be modified to meet all requirements.

The fastening plates are assembled to concrete before the casting. They can be used both in the production of precast elements and in cast-in-situ constructions.

Fastening Plates from Peikko saves both money and time during the whole construction process by making it safer, faster and more reliable.

WELDA Fastening Plate

WELDA® Fastening Plates transfer moderate and medium loads from other structures to concrete via welded connection. They are specially designed to be used in thin and shallow structures such as wall panels or slabs but they can also be placed in other structures such as beams and columns.

Standard WELDA® Fastening Plates comes in various sizes from 50 mm x 100 mm up to 400 mm x 2000 mm. Size range covers all fastening needs from small connections to welding of larger or multiple profiles to one long plate.

Plate thicknesses varies from 8 mm to 20 mm making the effective product depth from 68 mm to 170 mm. They are also available in various material combinations in plates and studs.

To fulfill customer specific needs dimensions and shapes of WELDA® Fastening Plates can be modified. By request the plate can also be machined, e.g. drilling of nail holes, or other components can be welded to the plate.

Approvals

Finland: BY 5 B-EC2 N:o 13 (fi, en)

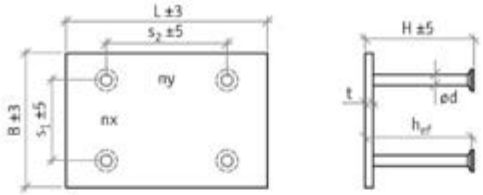
Materials

	plate material	standard	anchor material	standard
WELDA	S355J2+N	EN 10025-2	SD1 (black steel)	EN ISO 13918
WELDA R	1.4301	EN 10088-2	SD1 (black steel)	EN ISO 13918
WELDA Rr	1.4301	EN 10088-2	SD3 (stainless steel)	EN ISO 13918
WELDA A	1.4401	EN 10088-2	SD1 (black steel)	EN ISO 13918
WELDA Ar	1.4401	EN 10088-2	SD3 (stainless steel)	EN ISO 13918

SD1: $f_{yk} \geq 350$ N/mm², $f_{uk} \geq 450$ N/mm², A5 ≥ +15 %

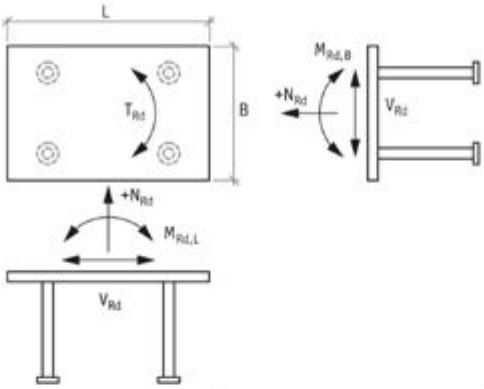
SD3: $f_{p0,2} \geq 350$ N/mm², $f_{uk} \geq 500$ N/mm², A5 ≥ 25 %

Dimensions



WELDA® B x L - H	B	L	H	t	h_{ef}	s_1	s_2	ød	nx	ny	Weight
	[mm]										[kg]
WELDA 50x100-68	50	100	68	8	61	0	60	10	1	2	0.4
WELDA 100x100-68	100	100	68	8	61	60	60	10	2	2	0.8
WELDA 100x150-70	100	150	70	10	63	60	90	10	2	2	1.4
WELDA 100x200-72	100	200	72	12	64	70	120	13	2	2	2.2
WELDA 100x200-162	100	200	162	12	154	70	120	13	2	2	2.6
WELDA 100x300-162	100	300	162	12	154	70	100	13	2	3	3.9
WELDA 150x150-70	150	150	70	10	63	90	90	10	2	2	2.0
WELDA 150x150-160	150	150	160	10	153	90	90	10	2	2	2.2
WELDA 150x150-162	150	150	162	12	154	90	90	13	2	2	2.8
WELDA 200x200-72	200	200	72	12	64	120	120	13	2	2	4.1
WELDA 200x200-162	200	200	162	12	154	120	120	16	2	2	4.9
WELDA 200x300-165	200	300	165	15	157	120	180	16	2	2	8.2
WELDA 250x250-165	250	250	165	15	157	170	170	16	2	2	8.5
WELDA 300x300-165	300	300	165	15	157	180	180	16	2	2	11.7

Resistances



WELDA® B x L - H	$+N_{Rd}$	$V_{Rd,x}$	$M_{Rd,L}$	$M_{Rd,B}$	T_{Rd}	min. area*
	[kN]			[kNm]		[mm x mm]
WELDA 50x100-68	10.6	19.0	0.8	0.3	0.9	8x73
WELDA 100x100-68	17.2	30.5	1.1	1.1	1.8	46x46
WELDA 100x150-70	20.3	37.2	1.8	1.3	2.7	10x75
WELDA 100x200-72	23.9	46.0	2.5	1.6	4.0	20x100
WELDA 100x200-162	79.2	89.5	9.6	5.4	7.8	55x173
WELDA 100x300-162	90.1	94.9	13.0	5.4	10.3	42x268
WELDA 150x150-70	22.7	44.4	2.0	2.0	3.5	50x50
WELDA 150x150-160	62.9	52.8	4.9	4.9	4.2	120x120
WELDA 150x150-162	77.9	90.6	7.5	7.5	7.2	115x115
WELDA 200x200-72	28.5	58.4	3.1	3.1	5.8	70x70
WELDA 200x200-162	86.6	143.2	10.6	10.6	14.3	157x157
WELDA 200x300-165	97.6	145.7	16.6	12.2	18.3	108x217
WELDA 250x250-165	104.2	150.2	15.9	15.9	20.3	169x169
WELDA 300x300-165	107.5	151.1	18.7	18.7	21.5	201x201

* Minimum fastening area for M_{Rd} with steel plate material S355

JPL Fastening Plate

JPL Fastening Plate series include anchor plates for transferring heavy loads from steel structures to concrete, e.g. in industrial constructions. This is done by welding a connection to the fastening plate. JPL series is designed to be used load bearing structures of concrete frame but the stud headed rebar anchors of JPL enable structural connections also to thinner concrete members.

Standard JPL plates come in 11 sizes from 150 x 150 mm up to 600 x 600 mm with product depth ranging from 220 mm to 280 mm.

Dimensions and shapes of JPL Fastening Plates can be modified according to project specific needs and they are available in various material combinations in plates and studs. By request the plate can also be machined, e.g. drilling of nail holes.

Approvals

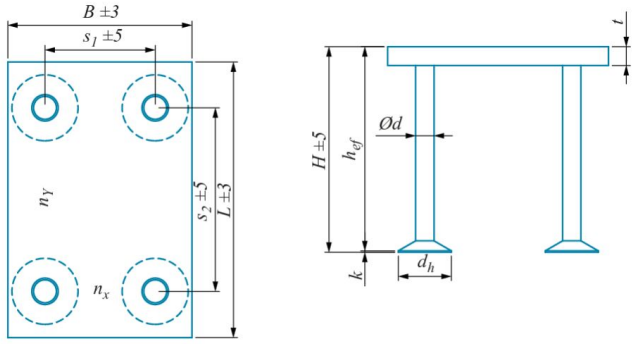
ETA: ETA-04/0056 (en, de)
Russia: РОСС FI.AB28.H16302

Materials

Types	Plate material	Standard	Anchor material	Standard
JPL	S355J2	EN 10025-2	B500B	EN 10080
JPLR	1.4301	EN 10088-2	B500B	EN 10080
JPLH	1.4401	EN 10088-2	B500B	EN 10080
JPLRr	1.4301	EN 10088-2	Gr 500	BS 6744

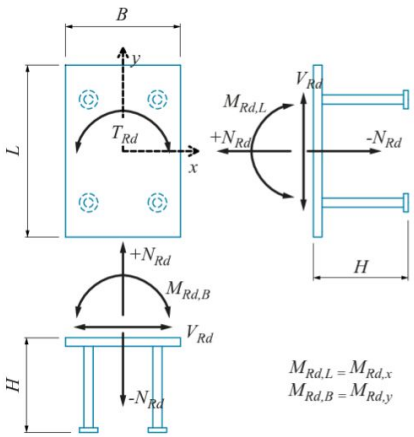
Painted A 40 µm is standard
Stainless and acid proof steel also available

Dimensions



JPL BxL-H	t	h_{ef}	s_1	s_2	d	n_x	n_y	Mass
	mm	mm	mm	mm	mm			kg
JPL 150x150-220	25	216	90	90	16	2	2	6.0
JPL 150x200-220	25	216	100	120	20	2	2	8.4
JPL 200x200-220	25	216	120	120	20	2	2	10.4
JPL 150x250-220	25	216	100	190	20	2	2	9.9
JPL 200x250-220	25	216	120	190	20	2	2	12.4
JPL 250x250-220	25	216	190	190	20	2	2	14.8
JPL 200x300-280	25	276	120	200	25	2	2	16.8
JPL 300x300-280	25	276	200	200	25	2	2	22.7
JPL 300x500-280	30	276	200	133	25	2	4	45.3
JPL 400x400-280	30	276	300	300	25	2	2	42.6
JPL 500x500-280	30	276	400	400	25	2	2	63.8
JPL 500x800-280	30	276	400	175	25	2	5	107
JPL 600x600-280	30	276	500	500	25	2	2	89.7

Resistances



JPL BxL-H	Tension resistance	Shear resistance	Moment resistance	Moment resistance	Torsion resistance	Min fast. area (S355)
	$+N_{Rd}$	V_{Rd}	$M_{Rd,L}$	$M_{Rd,B}$	T_{Rd}	for M_{Rd}
	[kN]	[kN]	[kNm]	[kNm]	[kNm]	mm x mm
JPL 150x150-220	120	142	11.4	11.4	11.2	60 x 60
JPL 150x200-220	127	223	15.3	12.4	21.0	70 x 100
JPL 200x200-220	130	233	16.0	16.0	23.3	110 x 110
JPL 150x250-220	138	235	21.7	13.7	29.5	95 x 160
JPL 200x250-220	142	238	22.7	17.9	30.9	110 x 160
JPL 250x250-220	155	247	25.0	25.0	36.9	160 x 160
JPL 200x300-280	193	352	35.1	24.0	47.2	100 x 200
JPL 300x300-280	209	391	39.1	39.1	61.1	180 x 180
JPL 300x500-280	250	490	65.2	45.6	63.0	190 x 340
JPL 400x400-280	252	404	61.6	61.6	91.6	190 x 190
JPL 500x500-280	298	411	87.3	87.3	122	260 x 260
JPL 500x800-280	372	754	149	109	170	345 x 550
JPL 600x600-280	349	415	117	117	152	340 x 340

KL Fastening Plate

KL Fastening Plate is a cost efficient solution for transferring moderate and medium loads to concrete. They are suitable especially when small edge distances are required, e.g. in in column heads and wall panel sides.

Plate dimensions of standard KL Fastening Plates vary from 50 x 100 mm to 300 x 300 mm. Plate thicknesses range from 8 mm to 15 mm. Product depths from 220 mm to 320 mm. They are also available in stainless and acid proof steel grades.

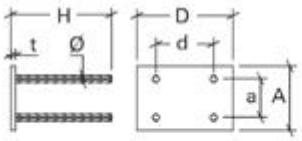
Approvals

Finland: BY 5 B N:o 381
Russia: РОСС RU.AB28.H15899

Materials

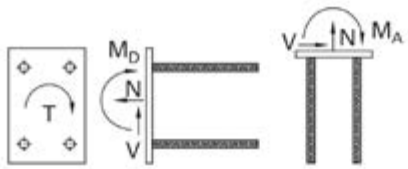
	plate	standard	anchors	standard
KL	S355J2+N	SFS-EN 10025	A500HW BSt 500 S B500B	SFS 1215 DIN 488 EN 10080
KLR	1.4301	SFS-EN 10088	A500HW BSt 500 S B500B	SFS 1215 DIN 488 EN 10080
KLH	1.4401	SFS-EN 10088	A500HW BSt 500 S B500B	SFS 1215 DIN 488 EN 10080

Dimensions



	AxDxt	H	d [mm]	a	Ø	weight [kg]
KL 50x100	50x100x8	218	60	-	12	0.7
KL 100x100	100x100x8	218	60	60	12	1.4
KL 100x150	100x150x10	220	90	60	12	2.0
KL 150x150	150x150x12	222	90	90	16	3.6
KL 100x200	100x200x12	222	120	60	16	3.3
KL 200x200	200x200x12	312	120	120	20	6.9
KL 100x300	100x300x15	315	180	60	20	6.7
KL 200x300	200x300x15	315	180	120	20	10.3
KL 300x300	300x300x15	315	180	180	20	13.9

Resistances



Resistances according to Finnish National Building Code (RakMk)

	N_{Rd}	V_{Rd3}	M_{Rd3}	M_{RdA}	T_{Rd}
	[kN]			[kNm]	
KL 50x100	7.7	9.8	0.38	0.28	0.49
KL 100x100	13.7	19.3	0.68	0.68	1.38
KL 100x150	18.4	19.3	1.20	0.91	1.76
KL 150x150	39.6	22.6	2.57	2.57	2.10
KL 100x200	37.2	19.3	2.96	1.86	2.15
KL 200x200	82.8	43.5	6.62	6.62	4.92
KL 100x300	72.3	34.8	7.94	3.61	5.50
KL 200x300	90.3	43.5	9.94	7.22	6.28
KL 300x300	98.5	47.5	10.80	10.80	7.38

Long Fastening Plates

Long WELDA® and P3KL Fastening Plates are designed to be used when long connections or several connections are needed on one plate. The length of the plates can be flexibly designed up to 6 m.

Long Fastening Plates are especially suitable for heavy industrial constructions and machine foundations.

P3KL Fastening Plates are available also according to European Technical Approval.

Approvals

WELDA:
Finland: BY 5 B-EC2 N:o 13

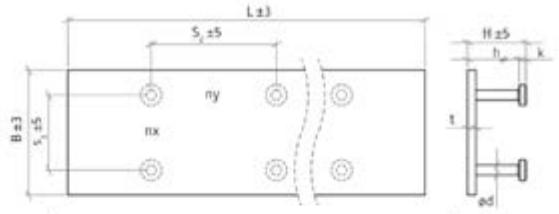
P3KL:
ETA: ETA-04/0056
Finland: BY 5 B N:o 330
Russia: РОСС FI.AB28.H16302

Materials

	plate material	standard	anchor material	standard
WELDA, P3KL	S355J2+N	EN 10025-2	SD1	EN ISO 13918
WELDA R, P3KLR	1.4301	EN 10088-2	SD1	EN ISO 13918
WELDA A, P3KLH	1.4401	EN 10088-2	SD1	EN ISO 13918

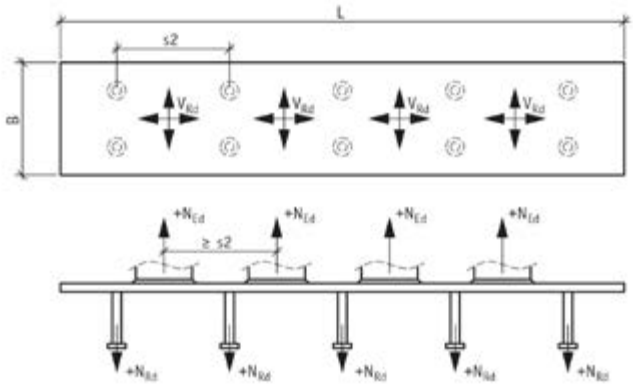
SD1 (black steel): $f_{yk} \geq 350$ N/mm², $f_{uk} \geq 450$ N/mm², $A_5 \geq +15$ %

Dimensions



WELDA® B x L - H P3KL B x L - H	B	L	H	t	h_{ef}	s_1	s_2	Ød	nx	ny	Weight
				[mm]							[~kg/m]
WELDA 100xL1-70	100	L1	70	10	62	70	150	13	2	3...13	8.9
WELDA 150xL1-70	150	L1	70	10	62	90	150	13	2	3...13	12.8
WELDA 200xL1-70	200	L1	70	10	62	100	150	13	2	3...13	16.8
WELDA 150xL2-115	150	L2	115	15	107	90	200	16	2	3...10	19.6
WELDA 200xL2-115	200	L2	115	15	107	100	200	16	2	3...10	25.5
WELDA 300xL2-115	300	L2	115	15	107	200	200	16	2	3...10	37.3
WELDA 400xL2-120	400	L2	120	20	112	200	200	16	2	3...10	64.8
P3KL 300xL2-220	300	L2	220	25	210	100	200	20	3	3...10	68.9
P3KL 400xL2-220	400	L2	220	25	210	150	200	20	3	3...10	88.5
P3KL 500xL2-220	500	L2	220	25	210	200	200	20	3	3...10	108
P3KL 600xL2-220	600	L2	220	25	210	250	200	20	3	3...10	128

L1 = 450/600/750/900/1050/1200/1350/1500/1650/1800/1950/2000 mm
L2 = 600/800/1000/1200/1400/1600/1800/2000 mm



WELDA® B x L – H	N_{Rd}* [kN]	V_{Rd}* [kN]
WELDA 100xL1-70	11.2	25.1
WELDA 150xL1-70	12.1	29.4
WELDA 200xL1-70	12.5	30.4
WELDA 150xL2-115	24.4	54.8
WELDA 200xL2-115	25.0	56.1
WELDA 300xL2-115	30.9	69.5
WELDA 400xL2-120	31.2	69.9

P3KL B x L - H	N_{Rd}* [kN]	V_{Rd}* [kN]	$N_{Rd, Fin}$ kN	$V_{Rd, Fin}$ kN
P3KL 300xL2-220	37.1	79.0	143.5	56.8
P3KL 400xL2-220	41.6	88.5	143.5	56.8
P3KL 500xL2-220	46.1	98.0	143.5	56.8
P3KL 600xL2-220	50.6	107.6	143.5	56.8

* Eurocode RESISTANCES per one row of anchors according to CEN/TS 1992-4:2009

Fin = Resistances per one row of anchors according to former Finnish National Building Code (RakMk)

*Resistances are per one row of anchors

SBKL Fastening Plate

Fastening Plate for moderate loads specially designed for wall panels, and thin and shallow structures. Stud headed anchors, plate sizes from 50 mm x 100 mm to 300 mm x 300 mm, plate thicknesses from 8 to 15 mm, product depth from 68 mm to 165 mm. Available in various material combinations in plates and studs. SBKL Fastening Plates are available also according to European Technical Approval.

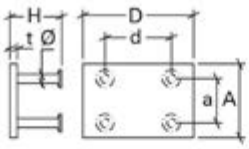
Approvals

ETA: ETA-04/0056
Finland: BY 5 B N:o 381
Germany: ETA-04/0056 (de)
Russia: РОСС FI.AB28.H16302

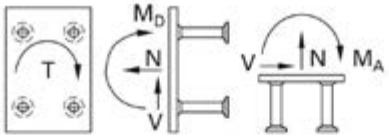
Materials

	plate	standard	anchors	standard
SBKL	S355J2+N	SFS-EN 10025-2	Ø12-S235J2+N Ø16-S355J2+N Ø13-S235J2+C450 Ø16-S235J2+C450	SFS-EN 10025-2
SBKLR	1.4301	SFS-EN 10088	Ø12-S235J2+N Ø16-S355J2+N	SFS-EN 10025-2
SBKLH	1.4401	SFS-EN 10088	Ø12-S235J2+N Ø16-S355J2+N	SFS-EN 10025-2
SBKLRr	1.4301	SFS-EN 10088	Ø12-1.4301 Ø16-1.4301	SFS-EN 10088
SBKLHh	1.4401	SFS-EN 10088	Ø12-1.4401 Ø16-1.4401	SFS-EN 10088
SBKLHr	1.4401	SFS-EN 10088	Ø12-1.4301 Ø16-1.4301	SFS-EN 10088

Dimensions



	AxDxt	H	d	a	Ø	weight
			[mm]			[kg]
SBKL 50x100	50x100x8	68	60	-	12	0,5
SBKL 100x100	100x100x8	68	60	60	12	0,9
SBKL 100x150	100x150x10	70	90	60	12	1,5
SBKL 150x150	150x150x12	162	90	90	12	2,7
SBKL 100x200	100x200x12	162	120	60	12	2,5
SBKL 200x200	200x200x12	162	120	120	16	4,9
SBKL 250x250	250x250x15	165	170	170	16	8,6
SBKL 100x300	100x300x15	165	180	60	16	4,7
SBKL 200x300	200x300x15	165	180	120	16	8,2
SBKL 300x300	300x300x15	165	180	180	16	11,9



Resistances according to **Finnish National Building Code (RakMk)**

	N_{Rd}	V_{RdD}	M_{RdD}	M_{RdA}	T_{Rd}
	[kN]			[kNm]	
SBKL 50x100	7,7	9,8	0,38	0,28	0,49
SBKL 100x100	13,7	19,3	0,68	0,68	1,38
SBKL 100x150	18,4	19,3	1,20	0,91	1,76
SBKL 150x150	39,6	22,6	2,57	2,57	2,10
SBKL 100x200	37,2	19,3	2,96	1,86	2,15
SBKL 200x200	82,8	43,5	6,62	6,62	4,92
SBKL 250x250	91,7	45,0	8,70	8,70	6,00
SBKL 100x300	72,3	34,8	7,94	3,61	5,50
SBKL 200x300	90,3	43,5	9,94	7,22	6,28
SBKL 300x300	98,5	47,5	10,80	10,80	7,38

FASTENING ITEMS

Standard fastening items are designed for frequent connection details in precast structures. The connections are typically located close to the edge of the structure, and the forces are transferred via straight rebars deeper into the structure.

KKT Angle Bars anchor loads in the structure corners. Typical applications are in heavy industrial construction.

KKT Angle Bar

KKT Angle Bars are designed to be used when long fixing or several fixings are needed on the concrete edges. They are especially suitable for heavy industrial constructions. The length of the KKT Angles can be flexibly designed up to 6 m.

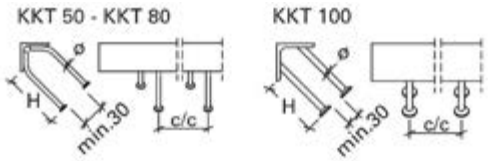
Approvals

Finland: BY 5 B N:o 330
Russia: РОСС FI.AB28.H16302
Sweden: 3403/89

Materials

	KKT	KKTR	KKTH
profile	S235JR	1.4301	1.4401
anchors	S235J2+N	S235J2+N	S235J2+N

Dimensions



	profile	Ø	c/c	H	weight
		[mm]			[~kg/m]
KKT 50	50x50x5	12	250	160	5,3
KKT 80	80x80x8	12	250	160	11,2
KKT 100	100x100x10	16	200	120	18,0

Resistances

	N_{Rd}*	V_{Rd}*
	[kN]	
KKT 50	14,6	16,3
KKT 80	14,6	16,3
KKT 100	26,0	28,7

Resistances according to **Finnish National Building Code (RakMk)**

*Resistances are per one row of anchors.

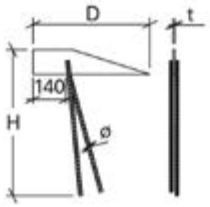
TR Fastening Items

TR Fastening Items are especially designed for precast standard details connecting elements together. They can be placed close to the structural edges and even into corners. Anchoring of the item is based on rebar anchors. Defined capacities and tested solutions make the selection of standard detail safe and easy.

Approvals

Finland: BY 5 B-EC 2 n:o 31 *(EC 2 NA)*
Finland: BY 5 B n:o 353 *(National)*
Russia: РОСС RU.AB28.H15899

TR 15, TR 16 & TR 17 support for square panels

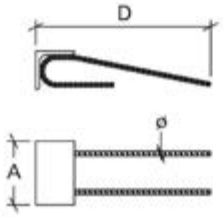


	H	D	t	Ø	V_{Rd}	weight
		[mm]			[kN]	[kg]
TR 15	570	455	8	10	35,0	2,5
TR 16	675	480	10	12	51,0	3,9
TR 17	873	560	12	16	93,2	7,1

Materials

	plate	anchors
TR 15/16/17	S355J2+N	B500B / BSt 500 S
TRR 15/16/17	1.4301	B500B / BSt 500 S

TR 23 & TR 24 edge anchors

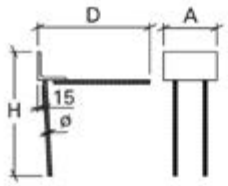


	D	A	angle bar	Ø	N_{Rd1}	N_{Rd2}	V_{Rd}	M_{Rd}	weight
			[mm]			[kN]		[kNm]	[kg]
TR 23	270	100	60 x 60 x 6	6 (7)	14,5	3,7	6,2	0,55	0,8
TR 24	350	100	80 x 80 x 8	8 (9)	25,7	6,6	11,1	1,31	1,5

Materials

	angle bar	anchors
TR 23 / TR 24	S235JR	B500B / BSt 500 S
TRR 23 / TRR 24	1.4301	B500B / BSt 500 S
TRRr 23 / TRRr 24	1.4301	B600KX

TR 25 & TR 26 support for square panels

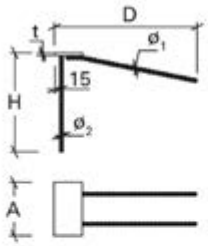


	H	D	A	angle bar	Ø	N_{Rd}	V_{Rd1}	V_{Rd2}	weight
		[mm]					[kN]		[kg]
TR 25	350	315	150	80 x 80 x 8	8	86,2	21,6	13,3	1,9
TR 26	450	415	150	100 x 100 x 10	10	104,1	36,2	23	3,2

Materials

	angle bar	anchors
TR 25 / TR 26	S235JR	B500B / BSt 500 S
TRR 25 / TRR 26	1.4301	B500B / BSt 500 S

TR 35 edge connector

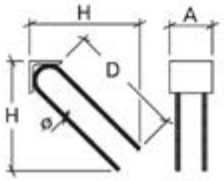


	H	D	A	t	Ø1	Ø2	N_{Rd}	V_{Rd1}	V_{Rd2}	M_{Rd1}	M_{Rd2}	weight
	[mm]						[kN]			[kNm]		[kg]
TR 35	150	260	80	8	6	8	3,4	12,0	5,8	0,39	0,14	0,5

Materials

	plate	anchors
TR 35	S355J2+N	B500B / BSt 500 S

TR 36 & TR 37 angle bars

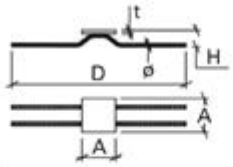


	H	D	A	angle bar	Ø	N_{Rd}	V_{Rd}	M_{Rd}	weight
	[mm]					[kN]		[kNm]	[kg]
TR 36	206	210	80	60 x 60 x 6	6 (7)	9,1	6,2	0,70	0,7
TR 37	264	270	100	80 x 80 x 8	8 (9)	18,8	11,1	1,81	1,5

Materials

	angle bar	anchors
TR 36 / TR 37	S235JR	B500B / BSt 500 S
TRR 36 / TRR 37	1.4301	B500B / BSt 500 S
TRRr 36 / TRRr 37	1.4301	B600KX

TR 38 slab anchor

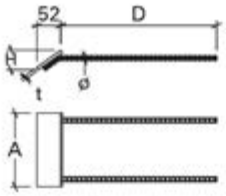


	H	D	A	t	Ø	N_{Rd}	$N_{Rd,re}$	V_{Rd}	M_{Rd}	weight
	[mm]					[kN]			[kNm]	[kg]
TR 38	45	560	100	10	8 (9)	13,3	18,7	14,1	0,93	1,3

Materials

	plate	anchors
TR 38	S355J2+N	B500B / BSt 500 S
TRR 38	1.4301	B500B / BSt 500 S
TRRr 38	1.4301	B600KX

TR 39 anchor for TT-slab

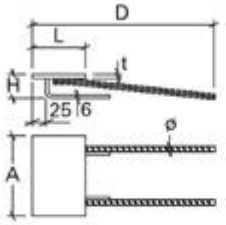


	H	D	A	t	Ø	N_{Rd}	V_{Rd}	weight
			[mm]			[kN]		[kg]
TR 39	40	306	150	6	8	20,3	11,1	0,7

Materials

	plate	anchors
TR 39	S235J2+N	B500B / BSt 500 S

TR 43, TR 45 & TR 46 edge anchors

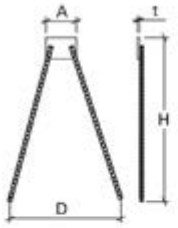


	H	L	D	A	t	Ø	N_{Rd}	V_{Rd1}	V_{Rd2}	M_{Rd1}	M_{Rd2}	wt.
			[mm]				[kN]			[kNm]		[kg]
TR 43	45	100	340	150	8	8 (9)	3,8	31,0	11,1	0,15	0,50	1,4
TR 45	45	100	340	100	8	8 (9)	3,4	26,1	11,1	0,12	0,42	1,1
TR 46	65	150	450	150	10	10 (11)	6,4	48,6	17,3	0,32	1,30	2,6

Materials

	plate	anchors	flat bar
TR 43 / TR 45	S235J2+N	B500B / BSt 500 S	S235JR
TRRr 43 / TRRr 45	1.4301	B600KX	1.4301

TR 44 fastening part for TT-slab



	H	D	A	t	Ø	N_{Rd}	V_{Rd}	weight
			[mm]			[kN]		[kg]
TR 44	540	355	100	8	10 (11)	47,1	17,3	1,1

Materials

	plate	anchors
TR 44	S355J2+N	B500B / BSt 500 S
TRR 44	1.4301	B500B / BSt 500 S
TRRr 44	1.4301	B600KX

Resistances

Resistances according to EC + Finnish NA.

CORNER PROTECTORS

Corner protectors are used to protect the corners of concrete structures against chipping. The KS Corner Protector is designed to protect the corners of columns or walls against impacts from, for example, forklift collisions. UKT and SKT Angle Bars are used to protect the edges of concrete slabs. Typical applications are in heavy industrial construction.

SKT Angle Bar

SKT Angle Bars are designed to be used in the inner corner of the concrete construction. They can transfer moderate loads to the concrete. The length of the SKT Angle can be flexibly designed up to 6 m. They can be cut easily to required length at building site. Anchoring of the SKT Angle is based on rebar anchors, which are bent on site to the right position. Delivery preferably in larger lots.

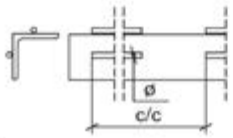
Approvals

Sweden: 3403/89

Materials

	pofile	anchors
SKT	S235JR	A500HW / BSt 500 S / B500B
SKTRr	1.4301	B600KX
SKTHr	1.4401	B600KX

Dimensions



	profile	Ø [mm]	c/c	weight [~kg/m]
SKT 50	50x50x5	6	300	4,2
SKT 70	70x70x7	6	300	7,8

UKT Angle Bar

UKT Angle Bars are designed to be used in the outer corner of the concrete construction. They can transfer moderate loads to the concrete. The length of the UKT Angle can be flexibly designed up to 6 m. They can be cut easily to the required length at building site. Anchoring of the UKT Angle is based on rebar anchors, which are bent at site to the right position. Delivery preferably in larger lots.

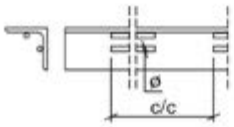
Approvals

Sweden: 3403/89

Materials

	pofile	anchors
UKT	S235JR	A500HW / BSt 500 S / B500B
UKTRr	1.4301	B600KX
UKTHr	1.4401	B600KX

Dimensions



	profile	Ø [mm]	c/c	weight [~kg/m]
UKT 40	40x40x4	6	300	2,8
UKT 50	50x50x5	6	300	4,2
UKT 60	60x60x6	6	300	5,9
UKT 70	70x70x7	6	300	7,8
UKT 80	80x80x8	6	300	10,2
UKT 100x50	100x50x8	6	300	9,6
UKT 100	100x100x10	6	300	16,0

KS Corner Protector

KS Corner Protectors are designed to protect the corners of columns and walls. They do not transfer any constructional loads. KS Corner Protectors are recommended to be used in industrial construction and warehouses with forklift traffic. Use of corner protectors keeps your investment in good shape throughout its lifetime.

Approvals

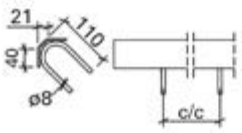
Sweden: 3403/89

Materials

	profile	anchors
KS	S235J2+N	A500HW
KSRr	1.4301	B600KX
KSHr	1.4401	B600KX

Standard surface coating: Hot Dip Galvanized.

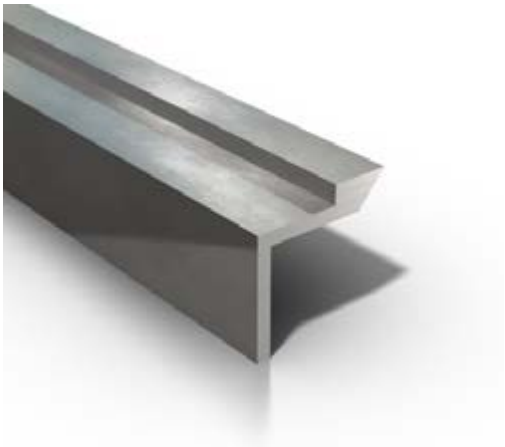
Dimensions



	profile	Ø	c/c	L	weight
		[mm]			[~kg/m]
KS	60x60x4	8	400	2000	4,0

RLRK Support

RLRK Supports are designed to be used in the outer corner of the concrete construction to support chequered plates covering openings in various passages. They do not transfer any constructional loads. Length of RLRK Support is 6 m and they can be cut easily to the required length at building site. Anchoring of the RLRK Support is based on rebar anchors, which are bent at site to the right position.

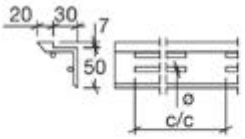


Materials

	pofile	anchors
RLRK	S235JR	A500HW
RLRKr	1.4301	B600KX

Painted A 40 µm and Hot Dip Galvanized as standard. Available also in stainless and acid proof steel.

Dimensions



	ø	c/c	weight
	[mm]		[kg]
RLRK	6	300	28,4

LIFTING SYSTEMS

Lifting Systems are designed for the safe lifting and transporting of precast concrete elements. Lifting Components comprise lifting anchors, clutches and lifting loops as well as installation accessories.

Peikko's lifting systems are CE marked.

RAPID COUPLING

The Rapid Coupling Systems are made for rough handling conditions and provide a safe solution for all applications. Anchoring takes place either through positive locking or by reinforcement. Rapid couplers may be used for heavy precast elements with up to 99 tons per lifting point.

KK Anchors

KK Lifting System is a rapid coupling lifting anchor system with load classes ranging from 1.3 to 32 tons. The system consists of anchors, lifting clutches and recess formers. It is used for lifting beams, thick slabs and wall panels as well as concrete tubes.

Approvals

Russia: POCC FI.AB28.H16302

CE Marking

Materials

KK anchors are produced of a special grade steel.

Resistances

Please refer to Technical Manual.

RR Anchors

RR anchors are designed and produced under strict quality control and with high performance materials to guarantee the highest possible safety. The RR anchors has a wide range of different load classes and length and can be used for almost all transport applications.

Approvals

Finland: BY 5 B n:o 375 (RR, RRr, RRK, RRKr)
Finland: BY 5 B n:o 331 (RRPr)

CE Marking

Materials

RR anchors are produced using a special grade steel.

Resistances

Please refer to Technical Manual.

WRA Wire Rope Anchor

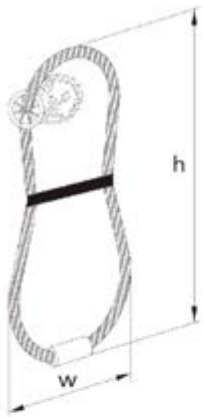
WRA anchors are designed as a rapid coupling system for lifting a wide range of precast elements. By lifting with WRA a pull-angle up to 30° is allowed. The capacity of the anchor is according to the market standard. Special sizes and length - tailor made products - are possible to produce. WRA anchors are best solution for very heavy elements up to 99 t per lifting point.

CE Marking

Materials

WRA anchors are produced under using a special grade wire rope and high quality ferrules.

Dimensions

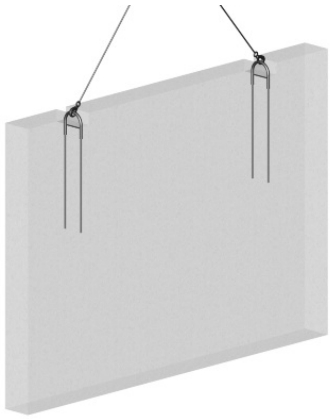


WRA model		load capacity	h	w	color code
blank	galvanised	[t]	[mm]		
WRA-0,8	WRA-0,8Z	0,8	210	100	Pure white
WRA-1,2	WRA-1,2Z	1,2	225	110	Blazing red
WRA-1,6	WRA-1,6Z	1,6	235	120	Light pink
WRA-2,0	WRA-2,0Z	2,0	280	130	White-green
WRA-2,5	WRA-2,5Z	2,5	315	140	Anthracite
WRA-4,0	WRA-4,0Z	4,0	340	150	Emerald-green
WRA-5,2	WRA-5,2Z	5,2	360	160	Curry-yellow
WRA-6,3	WRA-6,3Z	6,3	390	195	Light blue
WRA-8,0	WRA-8,0Z	8,0	440	250	Silver-grey
WRA-10,0	WRA-10,0Z	10,0	525	270	Purple
WRA-12,5	WRA-12,5Z	12,5	570	300	Yellow
WRA-16,0	WRA-16,0Z	16,0	615	330	Blue-lavender
WRA-20,0	WRA-20,0Z	20,0	730	360	Yellow-grey
WRA-25,0	WRA-25,0Z	25,0	800	390	Clay brown

Metrics h and w can vary due to the flexibility of the rope. All WRA Anchors are zinc coated.

PNLF Sandwich Wall Anchor

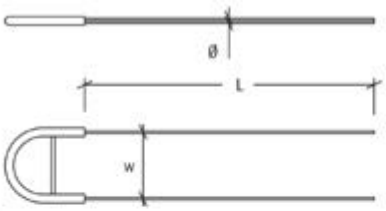
PNLF anchors are designed and produced under strict quality control and with high performance materials to guarantee the highest possible safety. The PNLF anchors has 6 different load classes a and can be used for transport precast sandwich wall elements.



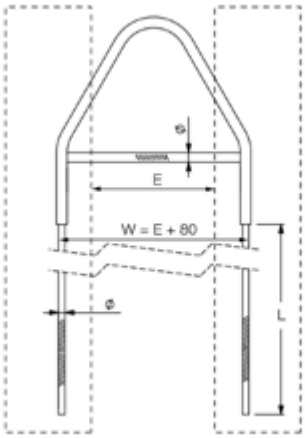
Materials

Rebars: B600KX, SFS 1259
Tubes: 1.4301 / AISI 304, EN 10088

Dimensions



	L [mm]	Ø	weight [kg]
PNL F1	600	1 Ø 7	1,0
PNL F2	770	1 Ø 9	1,5
PNL F3	940	1 Ø 11	2,3
PNL F4	920	2 Ø 9	3,2
PNL F5	1120	2 Ø 11	5,3
PNL F6	1350	3 Ø 11	8,7

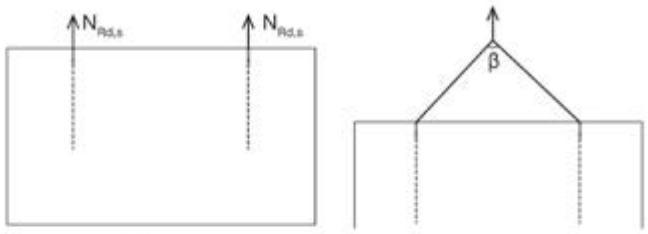


When thickness of insulation E > 200 mm, PNLF is manufactured as triangle shape.

The dimension W is thickness of the insulation layer + 80 mm.

Nomination:
example. Thickness of insulation E = 240 mm and load class 5 is sufficient:
PNLF5 E240

Resistances



	Max. weight	Max. element weight with angle ß			
	[t]	45°	60°	90°	120°
		[t]			
PNL F1	2,1	2,0	1,9	1,5	1,1
PNL F2	3,5	3,3	3,1	2,5	1,8
PNL F3	5,3	4,9	4,6	3,7	2,6
PNL F4	6,4	5,9	5,5	4,5	3,2
PNL F5	9,5	8,8	8,3	6,7	4,8
PNL F6	13,5	12,5	11,7	9,6	6,8

COLIFT Mounting System

The COLIFT Mounting System consists of a mounting shaft with a slip guard and a rope strut and serves as a mounting device for lifting, moving and erecting precast concrete elements. By attaching a releasing cord to the slip frog the system can be remotely released after securing the element on its place.

The load capacities vary from 5.8 to 42 tons with 30 cm corbel and from 15.8 to 120 tons without corbels.

The COLIFT Mounting System is manufactured under strict quality control. The system is labeled and CE marked according to EU Machinery Directive.

Related lifting slings, wires and cords are not a part of the COLIFT Mounting System delivery.

Dimensions

COLIFT Mounting Shaft

Corbel length LK [cm]	max. load capacity[t] mounting shaft	WLL_{min} [t] for each lifting point
Type [mm]	**Length [mm]**	**Weight [kg]**
Ø 70	**1200**	**45**
none	15,8	7,9
20	7,0	3,5
25	6,3	3,15
30	5,8	2,9
Ø 90	**1400**	**82**
none	44,0	22,0
20	18,0	9,0
25	15,5	7,25
30	12,5	6,25
Ø 115	**1800**	**168**
none	68,0	34,0
20	30,0	15,0
25	26,0	13,0
30	24,0	12,0
Ø 140	**2000**	**270**
none	120,0	60,0
20	57,0	28,5
25	51,0	25,5
30	42,0	21,0

COLIFT Rope Strut

Type	Strut width [mm]	Weight [kg]	Permissible angle of inclination
PS 01	1125 – 1800	80	ß ≤ 15°
PS 02	825 – 1200	65	ß ≤ 15°
PS 03	625 – 900	60	ß ≤ 15°

THREADED LIFTING SYSTEMS

Peikko's JENKA family consists of nine different types of standard threaded anchors providing a safe solution for all liftings. Anchoring is based on a rebar fastened to concrete. Threaded systems leave a nice surface without laborious finishing. You can use JENKA Lifting Devices at up to 90 degrees lifting angle.

JENKA BSA

The very short JENKA BSA anchors are speciallly designed for lifting very thin slabs and elements. By lifting with JENKA BSA a pull-angle up to 45° is allowed. The capacity and the thread system of the anchor is according to the market standard. Special sizes and length - tailor made products - are possible to produce

Approvals

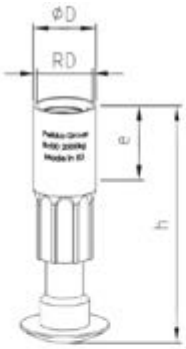
Russia: РОСС FI.AB28.H16302

CE Marking

Materials

JENKA anchors are produced under using a special grade steel for the sockets and high quality screws.

Dimensions



JENKA model	Type	Dimensions ØD	h	e	Load Capacity	Fs *
	RD		[mm]		[kg]	[kN]
BSA12x60	12	15,0	60	22	500	5
BSA14x70	14	18,0	70	25	800	8
BSA16x80	16	21,0	80	27	1200	12
BSA18x90	18	24,0	90	34	1600	16
BSA20x100	20	27,0	100	35	2000	20
BSA24x115	24	31,0	115	43	2500	25
BSA30x150	30	40,0	150	56	4000	40

* Fs= Allowed load force from 0° - 45°
(Note: A load force for a mass of 1 ton demands a force of approximately 10 kN)

JENKA CSA

JENKA CSA anchors are designed for lifting a wide range of precast elements. By lifting with JENKA CSA a pull-angle up to 90° is allowed. The capacity and the thread system of the anchor is according to the market standard. Special sizes and length - tailor made products - are possible to produce.

Approvals

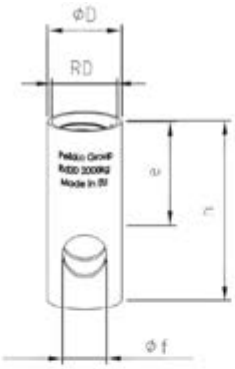
Russia: РОСС FI.AB28.H16302

CE Marking

Materials

JENKA anchors are produced under using a special grade steel for the sockets.

Dimensions



JENKA model	Type	Dimensions				Load Capacity	Fs *	Fq *
	RD	ØD	h	e	Øf	[kg]	[kN]	
CSA12x40	12	15,0	40	22	8,0	500	5	2,5
CSA14x47	14	18,0	47	25	10,5	800	8	4,0
CSA16x54	16	21,0	54	27	13,0	1200	12	6,0
CSA18x65	18	24,0	65	34	13,0	1600	16	8,0
CSA20x67	20	27,0	67	35	15,5	2000	20	10,0
CSA24x77	24	31,0	77	43	18,0	2500	25	12,5
CSA30x105	30	40,0	105	56	22,5	4000	40	20,0
CSA36x125	36	47,0	125	68	27,5	6300	63	31,5
CSA42x145	42	54,0	145	80	32,0	8000	80	40,0
CSA52x195	52	67,0	195	100	40,0	12500	125	62,5

* Fs= Allowed load force from 0° - 45°
* Fq= Allowed load force at 90°
(Note: A load force for a mass of 1 ton demands a force of approximately 10 kN)

JENKA ESA

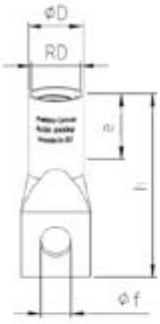
JENKA ESA anchors are designed for lifting a wide range of precast elements. By lifting with JENKA ESA a pull-angle up to 90° is allowed. The capacity and the thread system of the anchor is according to the market standard

Approvals

Russia: РОСС FI.AB28.H16302

CE Marking

Dimensions



JENKA model	Type	Dimensions ØD	h	e	Øf	Load Capacity	Fs *	Fq *
	RD	[mm]				[kg]	[kN]	
ESA12x60	12	15,0	60	22	8,0	500	5	2,5
ESA14x70	14	18,0	70	25	10,5	800	8	4,0
ESA16x77	16	21,0	77	27	13,0	1200	12	6,0
ESA18x85	18	24,0	85	34	13,0	1600	16	8,0
ESA20x92	20	27,0	92	35	15,5	2000	20	10,0
ESA24x105	24	31,0	105	43	18,0	2500	25	12,5

* Fs= Allowed load force from 0° - 45°
* Fq= Allowed load force at 90°
(Note: A load force for a mass of 1 ton demands a force of approximately 10 kN)

JENKA PLA

JENKA PLA anchors are designed for lifting precast elements. By lifting with JENKA PLA a pull-angle up to 90° is allowed. The capacity and the thread system of the anchor is according to the market standard. Special sizes and length - tailor made products - are possible to produce.

Approvals

Finland: BY 5 B-EC 2 n:o 41
Russia: РОСС FI.AB28.H16302

CE Marking

JENKA PSA

JENKA PSA anchors are designed for lifting of slabs and thin precast elements. By lifting with JENKA PSA a pull-angle up to 45° is allowed. The capacity and the thread system of the anchor is according to the market standard. Special sizes and length - tailor made products - are possible to produce.

Approvals

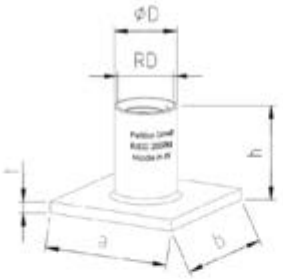
Russia: РОСС FI.AB28.H16302

CE Marking

Materials

JENKA anchors are produced under using a special grade steel for the sockets and plates.

Dimensions



JENKA model	Type	Dimensions ØD	h	a	b	t	Load Capacity	Fs *
	RD			[mm]			[kg]	[kN]
PSA12x30	12	15,0	30	35	25	4	500	5
PSA14x33	14	18,0	33	35	35	4	800	8
PSA16x35	16	21,0	35	50	35	4	1200	12
PSA18x44	18	24,0	44	60	45	5	1600	16
PSA20x47	20	27,0	47	60	60	5	2000	20
PSA24x54	24	31,0	54	80	60	5	2500	25
PSA30x72	30	40,0	72	100	80	6	4000	40
PSA36x84	36	47,0	84	130	100	6	6300	63
PSA42x98	42	54,0	98	130	130	8	8000	80
PSA52x117	52	67,0	117	150	130	10	12500	125

* Fs= Allowed load force from 0° - 45°
(Note: A load force for a mass of 1 ton demands a force of approximately 10 kN)

JENKA SRA

JENKA SRA anchors are designed for lifting a wide range of precast elements. By lifting with JENKA SRA a pull-angle up to 90° is allowed. The capacity and the thread system of the anchor is according to the market standard. Special sizes and length - tailor made products - are possible to produce.

Approvals

Finland: BY 5 B-EC2 n:o 24
Russia: РОСС FI.AB28.H16302

CE Marking

Materials

JENKA anchors are produced under using BSt 500 S for rebars and a special grade steel for the sockets.

Dimensions

JENKA model	Type	Dimensions ØD	h	e	Øds	Load Capacity	Fs *	Fq *
	RD	[mm]				[kg]	[kN]	
SRA12x195	12	15,0	195	22	8	500	5	2,5
SRA14x235	14	18,0	235	25	10	800	8	4,0
SRA16x275	16	21,0	275	27	12	1200	12	6,0
SRA18x305	18	24,0	305	34	14	1600	16	8,0
SRA20x360	20	27,0	360	35	14	2000	20	10,0
SRA24x400	24	31,0	400	43	16	2500	25	12,5
SRA30x505	30	40,0	505	56	20	4000	40	20,0
SRA36x690	36	47,0	690	68	25	6300	63	31,5
SRA42x840	42	54,0	840	80	28	8000	80	40,0
SRA52x950	52	67,0	950	100	32	12500	125	62,5

* Fs= Allowed load force from 0° - 45°
* Fq= Allowed load force at 90°
(Note: A load force for a mass of 1 ton demands a force of approximately 10 kN)

JENKA TF

JENKA TF anchors are designed for lifting a wide range of precast elements. By lifting with JENKA TF a pull-angle up to 90° is allowed. The capacity and the thread system of the anchor is according to the market standard. Special sizes and length - tailor made products - are possible to produce

Approvals

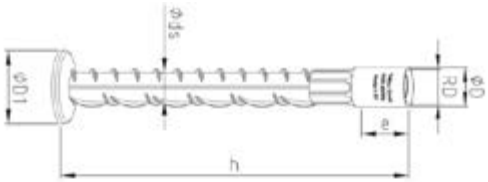
Finland: BY 5 B-EC2 n:o 24
Russia: РОСС FI.AB28.H16302

CE Marking

Materials

JENKA anchors are produced under using BSt 500 S for rebars and a special grade steel for the sockets.

Dimensions



JENKA model	Type	Dimensions					Load Capacity	Fs *	Fq *
	RD	ØD	h	e [mm]	Øds	ØD1	[kg]	[kN]	
TF12x100	12	15,0	100	22	8	24	500	5	2,5
TF12x150	12	15,0	150	22	8	24	500	5	2,5
TF14x105	14	18,0	105	25	10	30	800	8	4,0
TF14x155	14	18,0	155	25	10	30	800	8	4,0
TF16x130	16	21,0	130	27	12	36	1200	12	6,0
TF16x175	16	21,0	175	27	12	36	1200	12	6,0
TF18x150	18	24,0	150	34	14	42	1600	16	8,0
TF18x225	18	24,0	225	34	14	42	1600	16	8,0
TF20x185	20	27,0	185	35	14	42	2000	20	10,0
TF20x250	20	27,0	250	35	14	42	2000	20	10,0
TF24x200	24	31,0	200	43	16	48	2500	25	12,5
TF24x275	24	31,0	275	43	16	48	2500	25	12,5
TF30x275	30	40,0	275	56	20	60	4000	40	20,0
TF30x350	30	40,0	350	56	20	60	4000	40	20,0
TF36x335	36	47,0	335	68	25	75	6300	63	31,5
TF36x450	36	47,0	450	68	25	75	6300	63	31,5
TF42x385	42	54,0	385	80	28	84	8000	80	40,0
TF42x500	42	54,0	500	80	28	84	8000	80	40,0
TF52x550	52	67,0	550	100	32	96	12500	125	62,5
TF52x700	52	67,0	700	100	32	96	12500	125	62,5

* Fs= Allowed load force from 0° - 45°
* Fq= Allowed load force at 90°
(Note: A load force for a mass of 1 ton demands a force of approximately 10 kN)

JENKA WAL

The WAL anchors can be used instead of SRA anchors if the anchoring length is limited. Wall elements and other large elements can be lifted by WAL anchors. By lifting with JENKA WAL a pull-angle up to 90° is allowed. The capacity and the thread system of the anchor is according to the market standard. Special sizes and length - tailor made products - are possible to produce.

Approvals

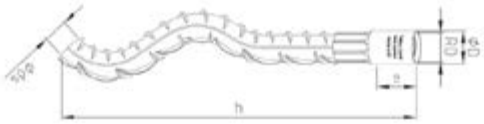
Russia: POCC FI.AB28.H16302

CE Marking

Materials

JENKA anchors are produced under using BSt 500 S for rebars and a special grade steel for the sockets.

Dimensions



JENKA model	Type	Dimensions				Load Capacity	Fs *	Fq *
	RD	ØD	h	e	Øds	[kg]	[kN]	
WAL12x135	12	15,0	135	22	8	500	5	2,5
WAL14x170	14	18,0	170	25	10	800	8	4,0
WAL16x215	16	21,0	215	27	12	1200	12	6,0
WAL18x235	18	24,0	235	34	14	1600	16	8,0
WAL20x270	20	27,0	270	35	14	2000	20	10,0
WAL24x350	24	31,0	350	43	16	2500	25	12,5
WAL30x450	30	40,0	450	56	20	4000	40	20,0
WAL36x570	36	47,0	570	68	25	6300	63	31,5
WAL42x620	42	54,0	620	80	28	8000	80	40,0
WAL52x880	52	67,0	880	100	32	12500	125	62,5

* Fs= Allowed load force from 0° - 45°
* Fq= Allowed load force at 90°
(Note: A load force for a mass of 1 ton demands a force of approximately 10 kN)

JENKA WAS

JENKA WAS anchor is designed for lifting slabs and small elements. By lifting with JENKA WAS pull angle up to 45° is allowed. The capacity and the thread system of the anchors is according to the market standard. Special sizes and length - tailor made products - are possible to produce.

Approvals

Russia: РОСС FI.AB28.H16302

CE Marking

Materials

JENKA anchors are produced using BSt 500 S for rebars and a special grade steel for the sockets.

Dimensions

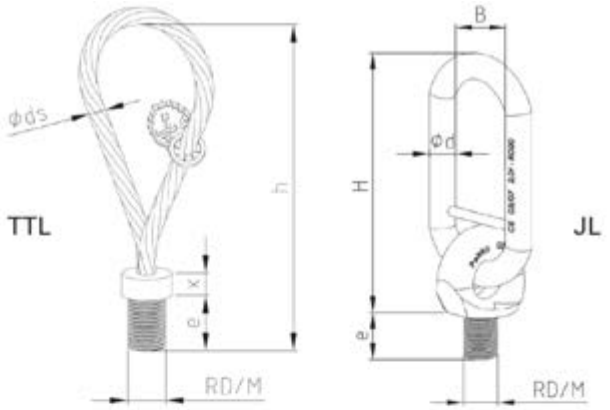
JENKA model	Type	Dimensions				Load Capacity	Fs *
	RD	ØD	h	e	Øds	[kg]	[kN]
			[mm]				
WAS12x105	12	15,0	105	22	8	500	5
WAS14x130	14	18,0	130	25	10	800	8
WAS16x165	16	21,0	165	27	12	1200	12
WAS18x175	18	24,0	175	34	14	1600	16
WAS20x195	20	27,0	195	35	14	2000	20
WAS24x240	24	31,0	240	43	16	2500	25
WAS30x300	30	40,0	300	56	20	4000	40
WAS36x380	36	47,0	380	68	25	6300	63
WAS42x450	42	54,0	450	80	28	8000	80

* Fs= Allowed load force from 0° - 45°
(Note: A load force for a mass of 1 ton demands a force of approximately 10 kN)

JENKA Lifting Devices

JENKA lifting devices are designed for lifting precast elements. By lifting with JENKA JL lifter a pull-angle up to 90° is allowed. Standard TLL are good for angle pull up to 45°. The capacity and the thread system of the lifting devices is according to the market standard.

Dimensions



JENKA model	Type	Dimensions h	e	Load Capacity	Fs *
	RD or M	[mm]		[kg]	[kN]
TLL12	12	155	22	500	5
TLL14	14	155	25	800	8
TLL16	16	165	27	1200	12
TLL18	18	190	34	1600	16
TLL20	20	215	35	2000	20
TLL24	24	255	43	2500	25
TLL30	30	300	55	4000	40
TLL36	36	360	67	6300	63
TLL42	42	425	75	8000	80
TLL52	52	530	95	12500	125

JENKA model	Type	Dimensions B	H	e	Ød	Load Capacity	Fs *	Fq *
	RD or M	[mm]				[kg]	[kN]	
JL12	12	50	150	19	13	500	5	2,5
JL14	14	50	150	21	13	800	8	4,0
JL16	16	50	150	24	13	1200	12	6,0
JL18	18	50	162	27	16	1600	16	8,0
JL20	20	50	162	29	16	2000	20	10,0
JL24	24	50	162	35	16	2500	25	12,5
JL30	30	50	177	43	22	4000	40	20,0
JL36	36	50	177	52	22	6300	63	31,5
JL42	42	65	218	60	26	8000	80	40,0
JL52	52	65	218	73	26	12500	125	62,5

JENKA Accessories

Peikko's range of products covers wide range of standard applications. But also non standard solutions are available - do not hesitate to ask for your special need!

All standard applications - e. g. nailplates, recess formers etc. - are available. For aesthetic requirements Peikko has patented stainless plugs for perfect look of elements. Special demands can also be solved by Peikko!

LIFTING ACCESSORIES

Peikko provides a wide range of different lifting accessories for all lifting systems. Peikko's range of products covers a wide selection of standard applications, e.g. nailing plates, recess formers, patented stainless plugs for a finished look of elements, and many more. Also tailored solutions are available.

Please do not hesitate to contact our sales!

TIES, LOOPS AND FIXING SOCKETS

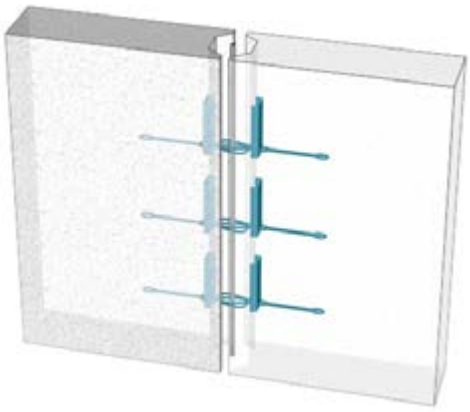
PD Ties are used for joining sandwich wall panels together in a simple and energy-efficient way for the full height of the panel. A PPA Tie is used to tie the panels together at the window or door opening beams. Each has standard models for insulation of up to 380 mm. PPI and PDQ Connector Pins are used for joining panels together through a rebar mesh from the edges of the panels and window panes.

TS is a joint reinforcement in a box of galvanized sheet with rebar anchoring for cast-in-situ joints. A narrow variant is also available for prefabrication. PVL Connection Loops are used to tie the ends of wall panels together or to a column. PVL Connection Loops transfer the shear forces created from the stiffening of the building over the joint from panel to panel.

Fixing sockets are female M-threaded fastening items, which are used for fixing points for temporary supports as well as permanent fixings for small loads. Peikko Fixing sockets are available in black and stainless steel.

LOOPS

Peikko's Loop Solutions are available for both precast and cast-in-situ structures. For precast structures Connecting Loops are absolutely the easiest way to arrange reinforcement to precast wall panel joints. Fixing into mold is easy as well as connecting on site: Open the cover and bend the loop into operating position. Another quick and easy solution is to use Panel Connectors, which are latch-type locking systems to connect wall panels. Install walls and lock them to together with a ratchet key. For cast-in-situ structures the ideal solution is the installation ready Joint Reinforcement System.



PVL Connecting Loop

PVL Connecting Loops are single wire loops for connecting precast wall panels to each other, or to a column. PVL Loops make wall installation easy: just open the cover and bend the loop to operating position. Patented SWC will remain in bended position – easy to connect to reinforcement.

Standard wire lengths of 60 mm, 80 mm, 100 mm, 120 mm and 140 mm are available for joint depth range of 80 - 140 mm. The box size is 160 x 50 x 22 mm.

Approvals

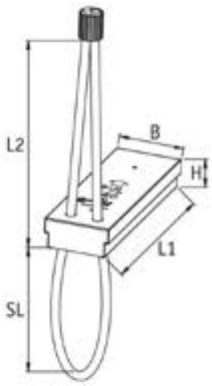
Finland: BY 5 B-EC 2 N:o 26 M1
Finland: BY 5 B-EC 2 N:o 32 *(PVL 140)*

Materials

Box: Galvanized Steel Sheet
Wire Rope Loop: High Strength Steel EN 12385-4
Pressed ferrule: S355J0
Cover: Tape

Dimensions

PVL	L1	L2	B	H	SL	wire Ø
	[mm]					
PVL 60	160	182	50	22	60	6
PVL 80	160	182	50	22	80	6
PVL 100	160	182	50	22	100	6
PVL 120	160	182	50	22	120	6
PVL 140	200	232	70	32	140	9



Resistances

Please refer to Technical Manual.

TS Joint Reinforcement

The TS Joint Reinforcement family contains various elements designed for varying use. TSA Joint reinforcement is an element where the loops are concreted to the first part of the structure (from the element). In TSK Joint Reinforcement, straight rebars are concreted to the first casting, the loops pointing out to the second one. TSA 42 Joint Reinforcement is designed for narrow (thin) walls.

Approvals

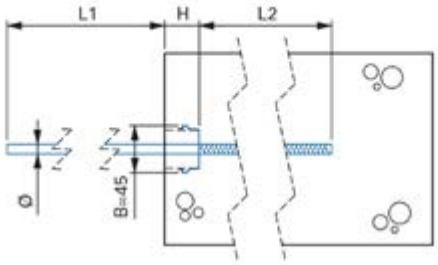
Russia: РОСС FI.AB52.H31911

Materials

Box: Galvanized sheet metal
Rebars: A500HW / B500B / BSt 500 S

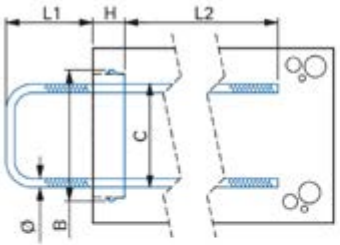
Dimensions

	B [mm]						
	45	85	115	145	175	205	225
	-	C=60	C=90	C=120	C=150	C=180	C=200
TSA 8	x	x	x	x	x	x	x
TSK 8	-	x	x	x	x	x	x
TSA10	x	x	x	x	x	x	x
TSK 10	-	x	x	x	x	x	x
TSA 12	-	-	x	x	x	x	x
TSK 12	-	-	x	x	x	x	x

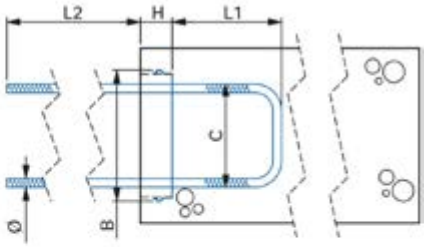


	L1	L2	H	L
	[mm]			
TSA 8	380	380	29	1250
TSA 10	480	480	36	1250

TSK



TSA

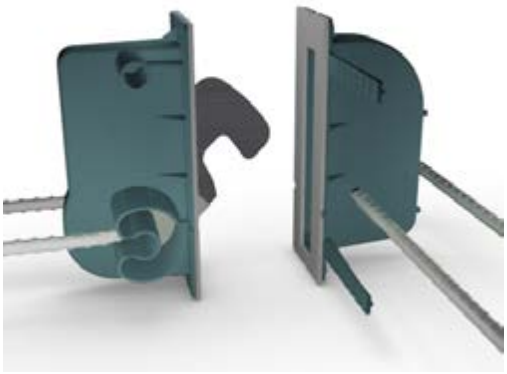


	L1	L2	H	L
	[mm]			
TSA 8	120	400	29	1250
TSK 8	120	400	29	1250
TSA 10	140	500	36 (50)	1250
TSK 10	140	500	36	1250
TSA 12	140	620	36 (50)	1250
TSK 12	140	620	36	1250

Sizes **TSA 10-150-85** and **TSA 12-150-115:** box depth H = 50 mm.

TENLOC Panel Connector

TENLOC® is a latch-type Panel Connector which is used to quickly create connections between precast elements. The system consists of a latch part and anchor part. The latch is tightened into the anchor part with a ratchet key. On site, concrete elements with latch parts and concrete elements with anchor parts are erected into the correct position and locked into each other by a pair of TENLOC® Panel Connectors. Precast vertical connections are finalized by grouting the latch boxes. In addition, TENLOC® can be used to connect parapets to façades, walls to columns, and slab elements to each other.



Dimensions

Type of connection	Exposure Class	Structural class S1	S2	S3	S4	S5	S6
		Minimum thickness of wall and minimum concrete cover [mm]					
Continuous connection	X0	100 (15)	100 (15)	100 (15)	100 (15)	120 (20)	120 (25)
	XC1	100 (15)	100 (15)	100 (15)	120 (20)	120 (25)	140 (30)
	XC2/XC3	100 (15)	120 (20)	120 (25)	140 (30)	140 (35)	160 (40)
Corner and T-connection	X0	120 (15)	120 (15)	120 (15)	120 (15)	120 (20)	120 (25)
	XC1	120 (15)	120 (15)	120 (15)	120 (20)	120 (25)	120 (30)
	XC2/XC3	120 (15)	120 (20)	120 (25)	120 (30)	140 (35)	140 (40)

TIES AND PINS

Complete connection between outer and inner panel of your sandwich wall. Multiple Tie solutions which can be finalized with Pins where needed.

PD Diagonal Tie

Diagonal Ties are wire connectors which allow the joining of sandwich wall concrete layers together. The outer and inner flanges of the tie are reinforcing or stainless steel, while the diagonal is always stainless. Diagonal Ties provide structural interaction between concrete layers from full height of the panel. Sandwich wall's design is based on logic that structural actions are resisted by tensile resistance of diagonals.

For lifting, stainless PNFL Lifting Loops are the ideal solution.

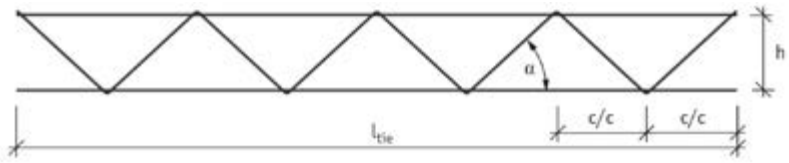
Approvals

Finland: BY 5 B-EC2 N:o 22
Russia: РОСС FI.АВ28.Н16302

Materials

Diagonal: Stainless steel
Inner and outer bar: Reinforcing or stainless reinforcing steel depending on configuration, please see Technical Manual.

Dimensions



	h [mm]	c/c	T*	l_{tie}	α [deg]	Weight [kg]
PD/PDM/PDR 100	100	300	40	2400	23	1.17
PD/PDM/PDR 120	120		60		26	1.18
PD/PDM/PDR 140	140		80		29	1.19
PD/PDM/PDR 150	150		90		31	1.20
PD/PDM/PDR 180	180		120		35	1.22
PD/PDM/PDR 200	200		140		38	1.23
PD/PDM/PDR 210	210		150		39	1.27
PD/PDM/PDR 220	220		160		40	1.27
PD/PDM/PDR 240	240		180		42	1.27
PD/PDM/PDR 260	260		200		44	1.28
PD/PDM/PDR 280	280		220		46	1.30
PD/PDM/PDR 300	300		240		48	1.32
PD/PDM/PDR 320	320		260		50	1.34
PD/PDM/PDR 340	340		280		52	1.36
PD/PDM/PDR 360	360		300		53	1.38
PD/PDM/PDR 380	380		320		55	1.40
PD/PDM/PDR 400	400		340		56	1.42
PD/PDM/PDR 420	420		360		57	1.44
PD/PDM/PDR 440	440		380		58	1.46
PD/PDM/PDR 450	450		390		59	1.47

T* = Recommended Insulation Thickness

Resistances

Please see Technical Manual.

PPA Beam Tie

PPA is used in sandwich wall panels where the height of concrete layers does not allow the use of Diagonal Ties. It is used together with Diagonal Ties or can be used independently in low socle elements. PPA Beam Ties are most commonly used in sandwich panels with insulation thicknesses of 90-390 mm.

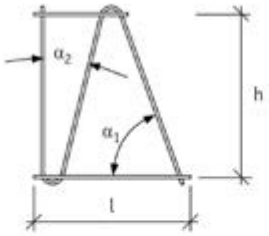
Approvals

Finland: BY 5 B-EC2 N:o 22
Russia: РОСС FI.АВ28.Н16302

Materials

Stainless reinforcement steel.

Dimensions



	h [mm]	l [mm]	T* [mm]	α_1 [deg]	α_2 [deg]	Weight [kg]
PPA 150	150	250	90	59	23	0.16
PPA 180	180		120	63	20	0.17
PPA 200	200		140	65	18	0.18
PPA 210	210		150	66	17	0.18
PPA 220	220		160	67	16	0.19
PPA 240	240		180	69	15	0.20
PPA 260	260		200	70	14	0.21
PPA 280	280		220	71	13	0.21
PPA 300	300	300	240	67	15	0.24
PPA 320	320		260	68	14	0.25
PPA 340	340		280	69	13	0.25
PPA 360	360	350	300	65	14	0.28
PPA 380	380		320	66	13	0.28
PPA 400	400		340	67	13	0.29
PPA 420	420	400	360	65	15	0.32
PPA 440	440		380	66	14	0.33
PPA 450	450		390	66	14	0.33

T* = Recommended Insulation Thickness

Resistances

Please refer to Technical Manual.

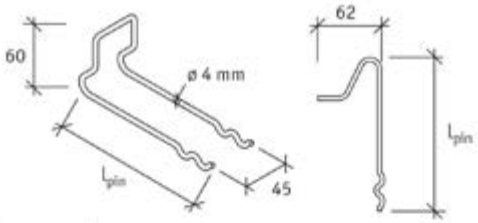
Connector Pins

PPI and PDQ Connector Pins are single connectors typically used in combination with Diagonal Ties to restrain deformation perpendicular to the concrete layer, such as warping. The connector pins are placed along circumference, near the edge of the sandwich wall element.

Connector pin requires 50 mm anchoring depth. Anchoring depth is ensured by installing the pin through insulation up to the limiter in the pin. Product range covers insulation thicknesses from 80 mm to 360 mm. Minimum connector pin length is 90 mm + insulation thickness.

Approvals

Finland: BY 5 B-EC 2 n:o 23
Russia: РОСС FI.AB28.H16302



	l_{pin}	Recommended insulation thickness T*		Weight	
		90° angle installation (PPI & PDQ)	45° angle installation (PPI)	PPI	PDQ
	[mm]	[mm]	[mm]	[kg]	[kg]
PPI/PDQ 170	170	80	-	0.03	0.05
PPI/PDQ 190	190	100	-	0.03	0.05
PPI/PDQ 210	210	120	-	0.03	0.06
PPI/PDQ 230	230	140	80	0.03	0.06
PPI/PDQ 250	250	160	100	0.03	0.06
PPI/PDQ 280	280	190	120	0.04	0.07
PPI/PDQ 300	300	210	140	0.04	0.07
PPI/PDQ 320	320	230	160	0.04	0.08
PPI/PDQ 340	340	250	170	0.04	0.08
PPI/PDQ 360	360	270	190	0.04	0.09
PPI/PDQ 380	380	290	200	0.05	0.09
PPI/PDQ 400	400	310	210	0.05	0.09
PPI/PDQ 420	420	330	230	0.05	0.10
PPI/PDQ 440	440	350	240	0.05	0.10
PPI/PDQ 450	450	360	250	0.05	0.10

T* = Recommended Insulation Thickness

FIXING SOCKETS

Peikko provides fixings that are designed and produced under strict quality control and from high performance materials, galvanized or stainless steel, to guarantee the highest possible safety. Peikko's fixings ensure maximum safety. Fixings are available in various sizes and variations, even with pre-installed bolts.

PUNCHING PREVENTION SYSTEMS

Peikko's wide range of tested and approved Punching and Shear Reinforcement systems offer economical concrete slim-floor construction.

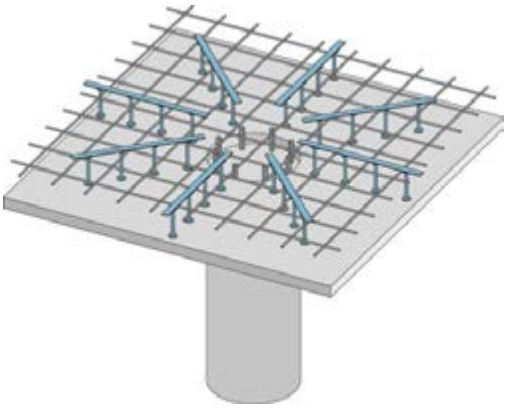
Peikko provide a simple and reliable reinforcing solution for various applications in Cast-in-situ and Precast structures making construction process fast, safe and cost efficient.

PUNCHING AND SHEAR REINFORCEMENT SYSTEM

Punching and Shear Reinforcement System

Peikko offer wide range of tested and approved Punching and Shear Reinforcement systems for different applications and load range, flexibility in design and delivery worldwide.

Most commonly Peikko's Punching and Shear Reinforcementis used for Cast-in-situ slim-floor construction. But it is possible to use also in foundations, walls, beams and other concrete elements for example wind tower foundations.

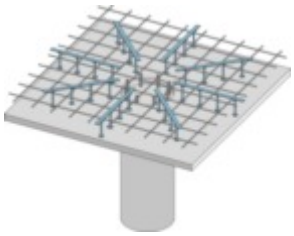


Design yourself with our user-friendly Peikko Designer® or contact our qualified technical support.

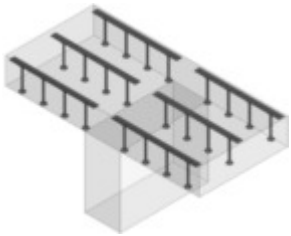
PSB Reinforcement System

PSB Rails are basically used for two different Application Cases:

1. Punching Reinforcement ("PSB"):
The Peikko PSB punching reinforcement is a powerful and economical solution of the punching reinforcement issue in punctiform supported in-situ and precast flat slabs, ground slabs and footings with concentrated load induction.



2. Shear Force Reinforcement ("PSB-S"):
According to DIN 1045-1:2008-08, shear force load bearing capacity must be demonstrated for each cross section of reinforced concrete building elements. As the load bearing capacity of non-reinforced cross sections was significantly lowered vs. old DIN 1045:1988-07, shear force reinforcement is used more and more often in ceiling and foundation slabs.



Dimensioning:
PSB punching reinforcement is dimensioned according to various approvals (ETA 13/0151, German Z-15-1-231, Poland AT-15-7688/2008...). Therefore we recommend our user-friendly dimensioning software Peikko Designer®. Download it from Peikko's Software Page. Please contact our local Technical Support at any time for information or dimensioning questions.

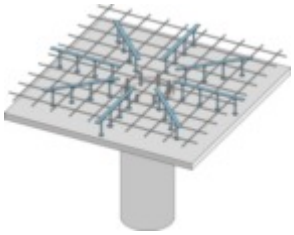
Design variants:

PSB type
Double headeds studs, assembled by a flat bar as spacing bar. Applicable for top and bottom installation. Available 2 and 3- System elements or as Complete elements (2-10 and more stud rail).

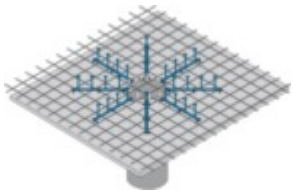
PSB-F type
Consists of a set of components: Double headed studs connected by preassembled plastic connectors to a flat bar as spacing bar having slotted holes in it. Applicable for element slabs and preferable as space saving stock solution. Available as 2- and 3- System elements.

Installation variants:

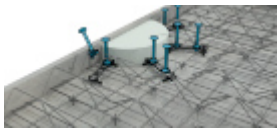
Cast-in-situ concrete variant for top-installation. For floor systems in cast-in-situ concrete, top-installation of the PSB elements is recommended. Due to that the entire remaining slab reinforcement can be installed prior to installation of the punching reinforcement elements. By means of using a cross connectors the proper mounting position can be ensured.



Bottom installation variant. As alternative to the installation from the top, it is also possible to install PSB punching reinforcement elements from the bottom by means of Peikko spacers available for concrete coverings from 15-45 mm prior to installing the slab reinforcement.



Precast variant. The multi-component type PSB-F for the use in precast factories. The partial structure enables the easy and fast installation of the punching reinforcement in the preferred phase of the automated production process without disturbing it. PSB-F rails are mounted by means of Peikko PSB spacers (available for concrete coverings from 15-45mm) in required height on the shuttering table in defined positions marked by the plotter. Lower bending reinforcement and the lattice girders can be positioned freely by reinforcement robot. The reinforcement work is easy, as the studs are not yet in place. When reinforcement process is complete the required PSB-F studs are easily clicked on the rails in predefined positions. The slotted holes on the rails offer assembly tolerance to ensure the proper installation of the studs.



Approvals

PSB:

ETA: ETA-13/0151 (en, de, pl)
Hungary: A-744/1/2007
Slovakia: TO-09/0114

PSB-S:
Germany: Z-15.1-267

CE Marking

Materials

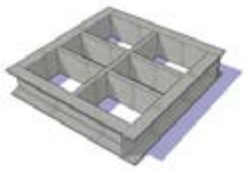
Double-headed studs are made from concrete reinforcement steel B500B (according to EN 10080, DIN 488) and available in diameters 10, 12, 14, 16, 20,25, 28 and 32 mm. ETA-13/0151 approves the use of PSB elements with diameters 10, 12, 14, 16, 20 and 25 mm. Elements using studs with larger diameters (28 mm and 32 mm) can be produced as well but are not within the scope of ETA-13/0151. The assembly bar consists of structural steel S235 or B500B. Each PSB punching reinforcement component is individually manufactured according to the static requirements. Besides in case of PSB-F type. It is specially developed as multi-component type for stock solution in order to ensure the best flexibility.

Resistances

Please refer to Technical Manual.

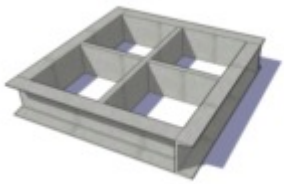
CUBO Column Cap

CUBO Column Caps are available in four different standard design types depending on the arising punching loads and the location of the column. They are calculated according to the static requirements.

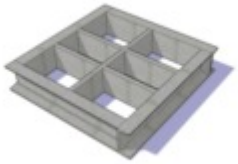


Standard design variants

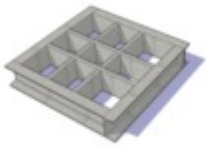
1. CUBO-N
Normal type for internal columns



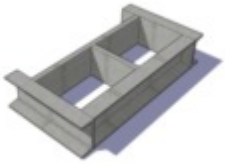
2. CUBO-H
H-type for higher punching resistance and internal columns



3. CUBO-D
Double-type for high punching resistance and internal columns



4. CUBO-E
Edge-type for edge columns



Materials

S355 J2+N (Norms: SIA 262,263)

DSA Reinforcement System

When used in elevated slabs such as reinforced concrete slabs or post-tensioned slabs, Peikko's DSA Reinforcement System will eliminate the need for column capitals, thus reducing the forming and concrete cost. Moreover, a thinner slab will lead to a lower floor-to floor height and therefore a reduction of the height of the building or possibly an extra floor. Besides increasing the resistance of the slab, DSA Punching Shear Reinforcement also increases its ductility.

Peikko's Punching and Shear Reinforcement Systems can also be used in foundations to reduce the thickness of footings, pile caps and slabs on grade.

Other applications (DSA Rails used as shear reinforcement in beams, walls and other concrete elements) are possible as well.

Additional benefit of stud rails in comparison to other reinforcement systems are reduction of installation time and labor costs.

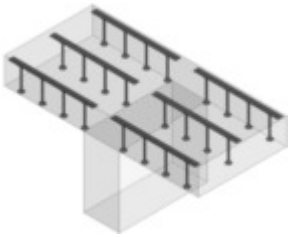
Applications:

1. Punching Reinforcement:

DSA RAILS are reliable and economical solution for punching shear reinforcement requirements in elevated flat slabs, slabs on grade and footings with concentrated load induction.

2. Shear Reinforcement:

Shear reinforcement is increasingly used in slabs, foundation, beams and walls as a more economical and faster to install alternative to stirrups and shear links.



Dimensioning:

DSA Rail are dimensioned according to ACI 318-11, CSA A23.3-04 and ASTM A1044.

For dimensioning of DSA Rails we recommend our user-friendly dimensioning software Peikko Designer®. Download it from Peikko's Software Page.

Please contact our local Technical Support at any time for information or dimensioning questions.

DSA Rail Types

DSA Rails consists of steel double headed DSA Studs welded to a steel shape. The steel shape has no load bearing function; it only guarantees the correct spacing and positioning of the studs during their installation in concrete as prescribed by ASTM-A1044 (2010). Application for a top and bottom installation possible.

DSA Studs are available at any length in following diameters: 10 mm (3/8"), 12,7 mm (1/2"), 15,9 mm (5/8"), 19 mm (3/4"), 25 mm (1")

Accessories

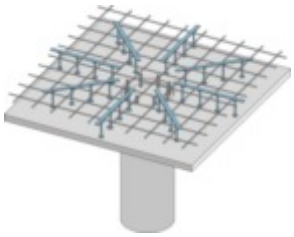
Universal DSA Rail spacers available for most common concrete covers in case of bottom installation.

Installation options:

DSA Rails are supplied to the job ready to install with proper dimensions, assembled and color-coded.

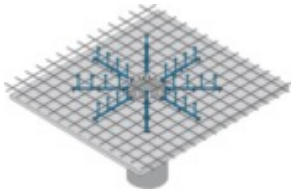
Top Installation

It is recommended to install DSA Rails from top to facilitate the installation of the main reinforcement in the slabs.



Bottom Installation

As alternative to the installation from the top, it is also possible to install DSA Rails from the bottom by means of Peikko spacers. When installed from the bottom DSA Rails shall be installed prior to the slab reinforcement.



Materials

The DSA Studs are fabricated of low carbon steel grades C1010 through C1020 in accordance with ASTM A1044.

The strength and ductility requirements for DSA Studs are:

Yield strength, min	51,000 psi [350 MPa]
Tensile strength, min	65,000 psi [450 MPa]
Elongation in 2", min	20%
Reduction of area, min	50%

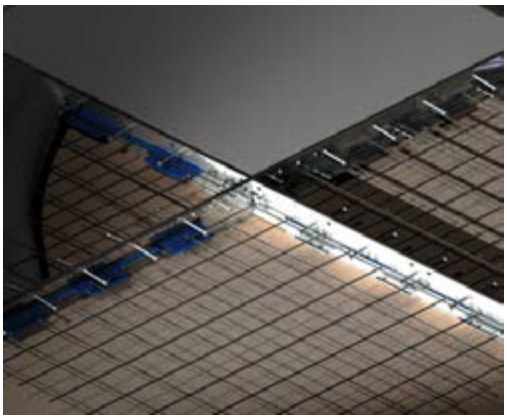
FLOORING PRODUCTS

Peikko floor joint systems offer the best practical and technical solution for today's high quality concrete floor slabs. The system allows fast casting of the floor, gives excellent load capacity, and minimizes cracking. Enjoy long lasting, trouble free floors for the entire life time of the building.

FREE MOVEMENT JOINTS

Peikko Floor Joints speed up floor construction and helps control cracking in concrete slabs. The round dowels in the floor joints transfer loads from one slab to another. Floor joints are recommended, for example, in industrial, warehouse and sales outlet buildings with forklift traffic.

The floor joints act as leave-in-placeformwork. They also enable simultaneous concreting of larger areas.



OPTIMAJOINT Free Movement Joint

OPTIMAJOINT is an innovative patented design in the range of heavy duty movement joint systems, suitable for all large area construction methods, for both ground bearing and pile supported concrete floors. The specially formed top rail with integrated anchoring provides efficient protection to the slab arrises, reduces impact damage on MHE wheels and significantly improves failure resistance of the joint. OPTIMAJOINT ensures reliable load transfer in joints with openings of up to 20 mm wide and it is suitable for slab depths from 125 mm to 300 mm.

OPTIMAJOINT can be supplied with different types of plate dowel systems, for compliance with different geographical market requirements:

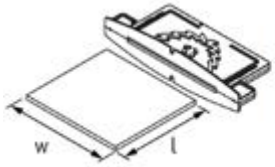
- **TDC 6** and **UDR 8** – Europe, Russia
- **TDR 6** and **UDR 8** – UK

Materials

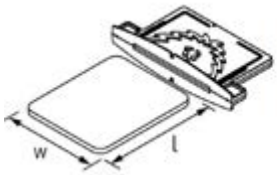
Version	Top rails	Divider plate	Plate dowels	Sleeves
OJ6	S235JR	DC01	S355J2+N	ABS
OJ6 HDG	S235JR HDG	DX51D+Z275	S355J2+N HDG	ABS
OJ8	S235JR	DC01	S700 MC	ABS
OJ8 HDG	S235JR HDG	DX51D+Z275	S700 MC HDG	ABS

Dimensions

Dowel type	TDC 6 - TERADOWEL circular 6 mm
Thickness **t**	6 mm
Diameter **d**	150 mm
Sleeve color	Green
Advisable joint opening	0~15 mm

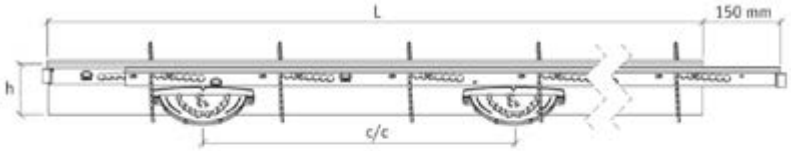


Dowel type	TDR 6 - TERADOWEL rectangular 6 mm
Thickness **t**	6 mm
Dimension **w** x **l**	150 x 135 mm
Sleeve color	Green
Advisable joint opening	0~15 mm



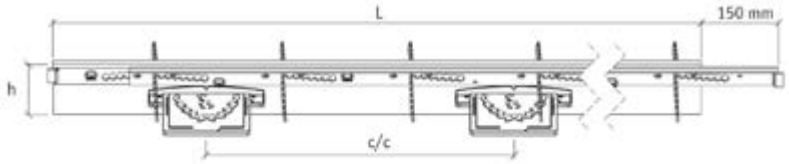
Dowel type	UDR 8 - ULTRADOWEL rectangular 8 mm
Thickness **t**	8 mm
Dimension **w** x **l**	145 x 175 mm
Sleeve color	Dark Grey
Advisable joint opening	15~20 mm

OPTIMAJOINT + TDC 6



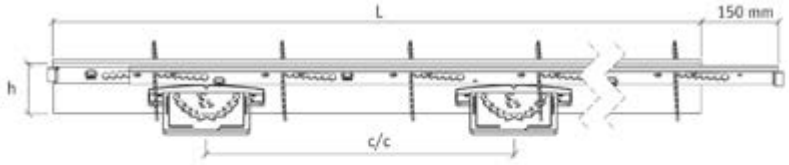
Type	Dowel type	Height **h**	Length **L** [mm]	Dowel centres **c/c**	Weight [kg]	Advisable slab depth [mm]
OJ6-115-3000	TDC 6	115	3000	600	19.1	125 - 145
OJ6-135-3000		135			19.8	145 - 170
OJ6-160-3000		160			20.7	170 - 195
OJ6-185-3000		185			21.5	195 - 225
OJ6-215-3000		215			22.6	225 - 250
OJ6-230-3000		230			23.1	245 - 270
OJ6-245-3000		245			23.6	260 - 300

OPTIMAJOINT + TDR 6



Type	Dowel type	Height **h**	Length **L** [mm]	Dowel centres **c/c**	Weight [kg]	Advisable slab depth [mm]
0J6-115-3000 RD	TDR 6	115	3000	600	19.7	125 - 145
0J6-135-3000 RD		135			20.4	145 - 170
0J6-160-3000 RD		160			21.3	170 - 195
0J6-185-3000 RD		185			22.2	195 - 225
0J6-215-3000 RD		215			23.3	225 - 250
0J6-230-3000 RD		230			23.9	245 - 270
0J6-245-3000 RD		245			24.4	260 - 300

OPTIMAJOINT + UDR 8



Type	Dowel type	Height **h**	Length **L** [mm]	Dowel centres **c/c**	Weight [kg]	Advisable slab depth [mm]
0J8-115-3000	UDR 6	115	3000	600	23.2	125 - 145
0J8-135-3000		135			23.9	145 - 170
0J8-160-3000		160			24.7	170 - 195
0J8-185-3000		185			25.6	195 - 225
0J8-215-3000		215			26.6	225 - 250
0J8-230-3000		230			27.1	245 - 270
0J8-245-3000		245			27.7	260 - 300

Resistances

Please refer to Technical Manual.

TERAJOINT Free Movement Joint

TERAJOINT is the industry standard in the range of prefabricated heavy-duty movement joint systems, suitable for all large-area construction methods for ground-bearing and pile-supported concrete floors. The cold-drawn steel rails provide extremely durable protection to the slab arrises, making it ideal for floors in a heavy-duty traffic environment.

The system ensures reliable load transfer in formed free-movement contraction joints with openings of up to 20 mm wide, and suitable for slab depths from 100 mm to 300 mm.

It is available in Plain Steel, Hot Dip Galvanized Finish or Stainless Steel versions.

The TERAJOINT permits free slab movements caused by drying shrinkage and thermal variations in both longitudinal and perpendicular directions of the slab plane, transfers vertical loads between adjacent slabs, and minimizes vertical displacement of the slabs. The load transfer system is accomplished using discrete plate dowels made from high-strength steel, moving within rigid plastic release sleeves.

TERAJOINT can be supplied with different types of plate dowel systems at different geographical markets:

TDC 6 and **UDR 8** – Europe, Russia
TDR 6 and **UDR 8** – UK, Gulf, USA
TJD-R6, **TJD-R8** and **TJD-R12** - APAC

Approvals

Hungary: A-154/2009
Russia: РОСС FI.AB28.H16302

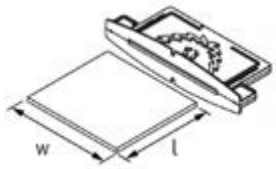
Materials

	Version	Top rails	Divider plate	Plate dowels	Headed studs	Sleeves
TJ6	standard	S235JRC+C	DC01	S355J2+N	S235J2+C450	ABS
	HDG	S235JRC+C HDG	DC01 HDG	S355J2+N HDG	S235J2+C450 HDG	ABS
	stainless	1,4301	DC01 HDG	S355J2+N HDG	S235J2+C450	ABS
	acid proof	1,4401	1,4401	1,4401	1,4301	ABS
TJ8	standard	S235JRC+C	DC01	S700 MC	S235J2+C450	ABS
	HDG	S235JRC+C HDG	DC01 HDG	S700 MC HDG	S235J2+C450 HDG	ABS
	stainless	1,4301	DC01 HDG	S700 MC HDG	S235J2+C450	ABS
	acid proof	1,4401	1,4401	1,4401	1,4301	ABS

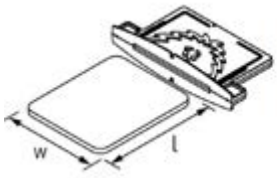
HDG = hot dip galvanized. Standard for black steel is EN 10025 and EN 10088 for stainless.

Dimensions

Dowel type	TDC 6 - TERADOWEL circular 6 mm
Thickness **t**	6 mm
Diameter **d**	150 mm
Sleeve color	Green
Advisable joint opening	0~15 mm

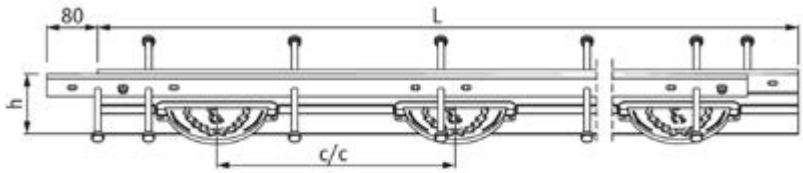


Dowel type	TDR 6 - TERADOWEL rectangular 6 mm
Thickness **t**	6 mm
Dimension **w** x **l**	150 x 135 mm
Sleeve color	Green
Advisable joint opening	0~15 mm



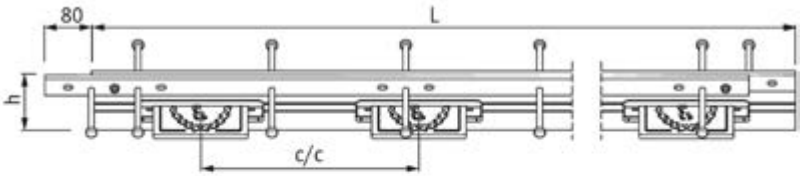
Dowel type	UDR 8 - ULTRADOWEL rectangular 8 mm
Thickness **t**	8 mm
Dimension **w** x **l**	145 x 175 mm
Sleeve color	Dark Grey
Advisable joint opening	15~20 mm

TERAJOINT + TDC 6



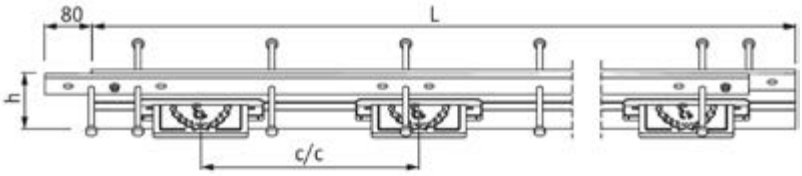
Type	Dowel type	Height **h**	Length **L** [mm]	Dowel centres **c/c**	Weight [kg]	Advisable slab depth [mm]
TJ6-90-3000	TDC 6	90	3000	500	29.4	100 - 120
TJ6-115-3000		115			30.5	125 - 145
TJ6-135-3000		135			31.5	145 - 170
TJ6-160-3000		160			32.6	170 - 195
TJ6-185-3000		185			33.8	195 - 225
TJ6-215-3000		215			35.2	225 - 250
TJ6-230-3000		230			35.9	245 - 270
TJ6-245-3000		245			36.6	260 - 300

TERAJOINT + TDR 6



Type	Dowel type	Height **h**	Length **L** [mm]	Dowel centres **c/c**	Weight [kg]	Advisable slab depth [mm]
TJ6-90-3000	TDR 6	90	3000	500	29.4	100 - 120
TJ6-115-3000		115			30.5	125 - 145
TJ6-135-3000		135			31.5	145 - 170
TJ6-160-3000		160			32.6	170 - 195
TJ6-185-3000		185			33.8	195 - 225
TJ6-215-3000		215			35.2	225 - 250
TJ6-230-3000		230			35.9	245 - 270
TJ6-245-3000		245			36.6	260 - 300

TERAJOINT + UDR 8



Type	Dowel type	Height **h**	Length **L** [mm]	Dowel centres **c/c**	Weight [kg]	Advisable slab depth [mm]
TJ8-135-3000	UDR 8	135	3000	500	36.1	145 - 170
TJ8-160-3000		160			37.2	170 - 195
TJ8-185-3000		185			38.4	195 - 225
TJ8-215-3000		215			39.8	225 - 250
TJ8-230-3000		230			40.5	245 - 270
TJ8-245-3000		245			41.2	260 - 300

D* = Advisable Floor Slab Depth

Resistances

Please refer to the Technical Manual.

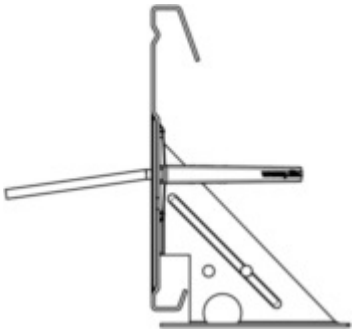
METAFORM Free Movement Joint

The METAFORM system enables us to build several versions of free movement joints according to application type and environment, utilizing basic METAFORM formwork which is available in different heights, with any of our load transfer systems and snap in installation feet. METAFORM is produced by roll forming from high tensile galvanized steel to resist corrosion. The load transfer system is attached to the formwork by plastic connection elements.

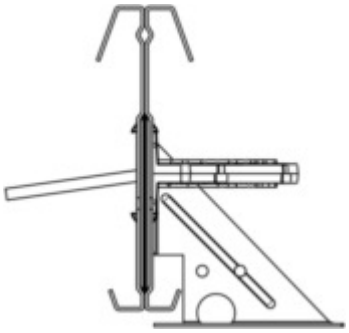
The system ensures reliable load transfer at joints with openings of up to 20 mm wide and is suitable to use on slab depths from 125 mm to 250 mm, mainly for areas with rubber and pneumatic tyre traffic.

Four distinct types of prefabricated free movement joints can be built, by utilizing the components of the system:

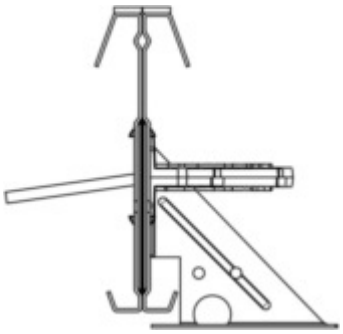
METAFORM (Single Rail)



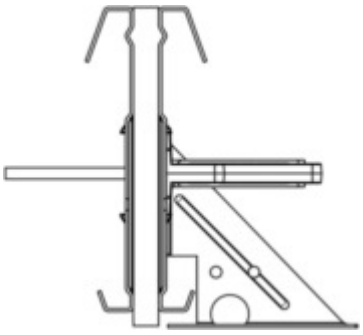
METAFORM DUO



METAFORM DUO SS



METAFORM DUO EX



METAFORM can be supplied with different types of plate dowel systems at different geographical markets:

- **TDC 5**, **TDC 6**, **TDR 6** and **UDR 8** – Europe, Russia
- **TDR 6** and **UDR 8** – UK, Gulf, APAC, USA

Application

Please refer to Technical Manual.

Approvals

Russia: РОСС FI.AB28.H16302

Materials

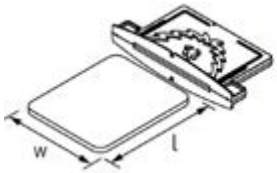
Version / component	MTF	MTF DUO	MTF DUO SS	MTF DUO EX
Formwork	S390GD+Z BS	S390GD+Z BS	S390GD+Z BS	S390GD+Z BS
Plate dowels	S355J2+N	S355J2+N, S700MC	S355J2+N HDG, S700MC HDG	S355J2+N HDG
Sleeves	ABS, blue, green	ABS, green, dark grey	ABS, green, dark grey	ABS, green
Compressible foam	N/A	N/A	N/A	Miothene 30 kg/m³
Adjustable installation feet	S355MC	S355MC	S355MC	S355MC
Top strip	N/A	N/A	1,4301	N/A
	HDG = hot dip galvanized.			

Dimensions

Dowel type	TDC 5 - TERADOWEL circular 5 mm
Thickness **t**	5 mm
Diameter **d**	150 mm
Sleeve color	Blue
Advisable joint opening	0~10 mm

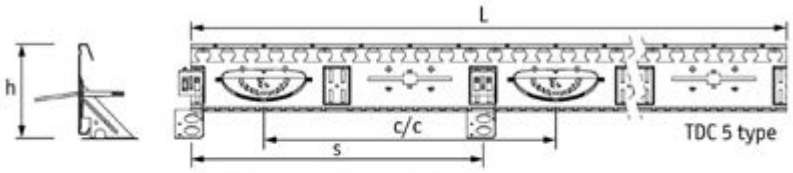
Dowel type	TDC 6 - TERADOWEL circular 6 mm
Thickness **t**	6 mm
Diameter **d**	150 mm
Sleeve color	Green
Advisable joint opening	0~15 mm

Dowel type	TDR 6 - TERADOWEL rectangular 6 mm
Thickness **t**	6 mm
Dimension **w x l**	150 x 135 mm
Sleeve color	Green
Advisable joint opening	0~15 mm



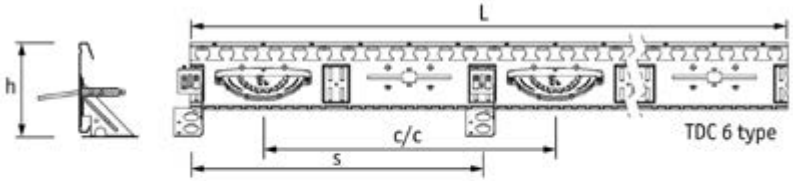
Dowel type	UDR 8 - ULTRADOWEL rectangular 8 mm
Thickness **t**	8 mm
Dimension **w x l**	145 x 175 mm
Sleeve color	Dark Grey
Advisable joint opening	15~20 mm

METAFORM + TDC 5



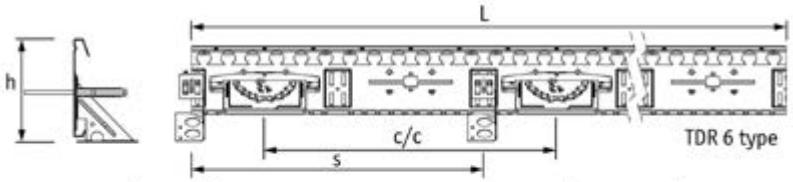
Type	Dowel type	Height h	Length L	Dowel centres c/c [mm]	Feet spacing s	Weight [kg]	Advisable slab depth [mm]
MTF5-115-3000	TDC 5	115	3000	600	600	8.2	125 - 145
MTF5-135-3000		135				10.4	145 - 170
MTF5-160-3000		160				11.3	170 - 195
MTF5-185-3000		185				12.2	195 - 220
MTF5-210-3000		210				13.2	220 - 250

METAFORM + TDC 6



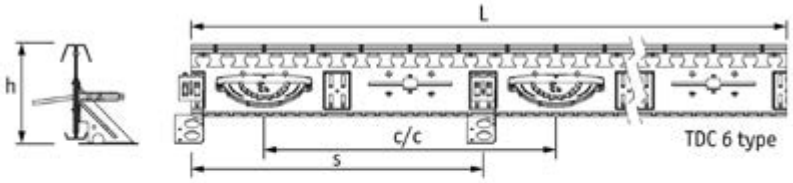
Type	Dowel type	Height h	Length L	Dowel centres c/c [mm]	Feet spacing s	Weight [kg]	Advisable slab depth [mm]
MTF6-115-3000	TDC 6	115	3000	600	600	8.9	125 - 145
MTF6-135-3000		135				11.0	145 - 170
MTF6-160-3000		160				12.0	170 - 195
MTF6-185-3000		185				12.9	195 - 220
MTF6-210-3000		210				13.9	220 - 250

METAFORM + TDR 6



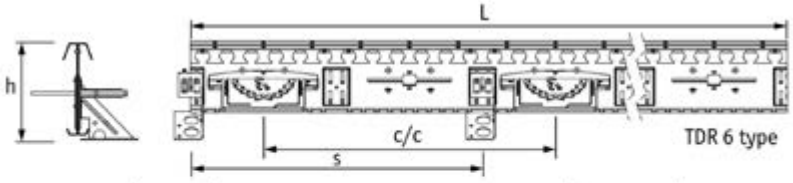
Type	Dowel type	Height h	Length L	Dowel centres c/c [mm]	Feet spacing s	Weight [kg]	Advisable slab depth [mm]
MTF6-115-3000	TDR 6	115	3000	600	600	8.9	125 - 145
MTF6-135-3000		135				11.0	145 - 170
MTF6-160-3000		160				12.0	170 - 195
MTF6-185-3000		185				12.9	195 - 220
MTF6-210-3000		210				13.9	220 - 250

METAFORM DUO + TDC 6



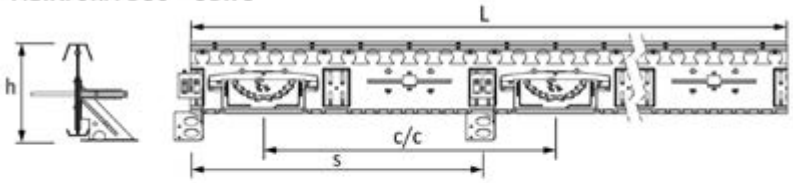
Type	Dowel type	Height h	Length L	Dowel centres c/c [mm]	Feet spacing s	Weight [kg]	Advisable slab depth [mm]
MTFD6-115-3000	TDC 6	115	3000	600	600	13.2	125 - 145
MTFD6-135-3000		135				17.5	145 - 170
MTFD6-160-3000		160				19.4	170 - 195
MTFD6-185-3000		185				21.3	195 - 220
MTFD6-210-3000		210				23.2	220 - 250

METAFORM DUO + TDR 6



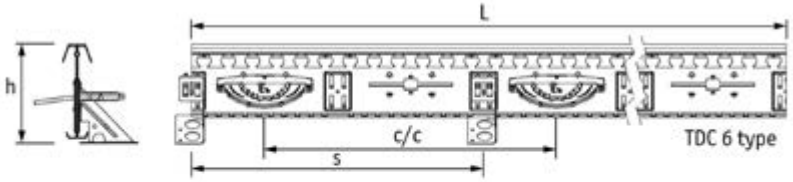
Type	Dowel type	Height h	Length L	Dowel centres c/c [mm]	Feet spacing s	Weight [kg]	Advisable slab depth [mm]
MTFD6-115-3000	TDR 6	115	3000	600	600	13.2	125 - 145
MTFD6-135-3000		135				17.5	145 - 170
MTFD6-160-3000		160				19.4	170 - 195
MTFD6-185-3000		185				21.3	195 - 220
MTFD6-210-3000		210				23.2	220 - 250

METAFORM DUO + UDR 8



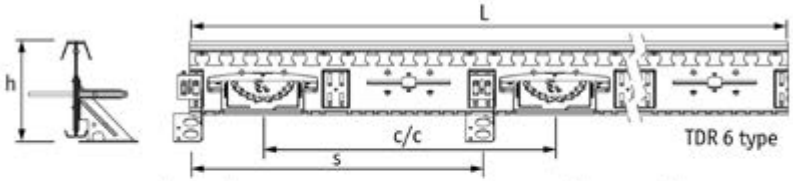
Type	Dowel type	Height h	Length L	Dowel centres c/c [mm]	Feet spacing s	Weight [kg]	Advisable slab depth [mm]
MTFD8-115-3000	UDR 8	115	3000	600	600	17.4	125 - 145
MTFD8-135-3000		135				21.8	145 - 170
MTFD8-160-3000		160				23.6	170 - 195
MTFD8-185-3000		185				25.5	195 - 220
MTFD8-210-3000		210				27.4	220 - 250

METAFORM DUO SS + TDC 6



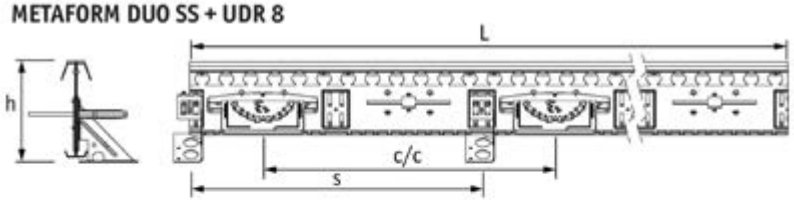
Type	Dowel type	Height h	Length L	Dowel centres c/c [mm]	Feet spacing s	Weight [kg]	Advisable slab depth [mm]
MTFD6-115-3000 SS	TDC 6	118	3000	600	600	15.3	125 - 145
MTFD6-135-3000 SS		138				19.7	145 - 170
MTFD6-160-3000 SS		163				21.5	170 - 195
MTFD6-185-3000 SS		188				23.4	195 - 220
MTFD6-210-3000 SS		213				25.3	220 - 250

METAFORM DUO SS + TDR 6



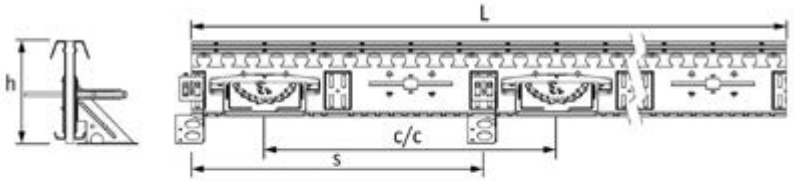
Type	Dowel type	Height h	Length L	Dowel centres c/c [mm]	Feet spacing s	Weight [kg]	Advisable slab depth [mm]
MTFD6-115-3000 SS	TDR 6	118	3000	600	600	15.3	125 - 145
MTFD6-135-3000 SS		138				19.7	145 - 170
MTFD6-160-3000 SS		163				21.5	170 - 195
MTFD6-185-3000 SS		188				23.4	195 - 220
MTFD6-210-3000 SS		213				25.3	220 - 250

METAFORM DUO SS + UDR 8



Type	Dowel type	Height h	Length L	Dowel centres c/c [mm]	Feet spacing s	Weight [kg]	Advisable slab depth [mm]
MTFD8-115-3000 SS		118				19.5	125 - 145
MTFD8-135-3000 SS		138				23.9	145 - 170
MTFD8-160-3000 SS	UDR 8	163	3000	600	600	25.7	170 - 195
MTFD8-185-3000 SS		188				27.6	195 - 220
MTFD8-210-3000 SS		213				29.5	220 - 250

METAFORM DUO EX



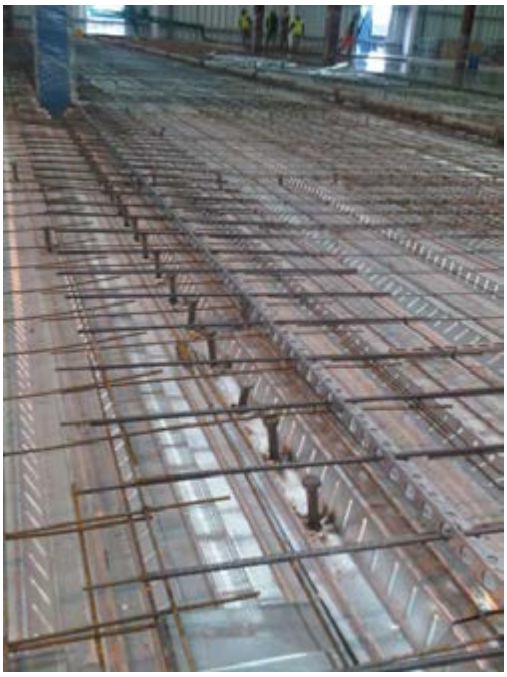
Type	Dowel type	Height h	Length L	Dowel centres c/c [mm]	Feet spacing s	Weight [kg]	Advisable slab depth [mm]
MTFD6-115-3000 EX		115				14.3	125 - 145
MTFD6-135-3000 EX		135				18.6	145 - 170
MTFD6-160-3000 EX	TDR 6	160	3000	600	600	20.5	170 - 195
MTFD6-185-3000 EX		185				22.4	195 - 220
MTFD6-210-3000 EX		210				24.3	220 - 250

Resistances

Please refer to Technical Manual.

SCREED RAILS

Versatile Screed Rail Systems and basic free-movement joint formworks provide a guide for the screeding mechanism for application of screed layers. They also enable the construction of basic contraction- and expansion-formed free-movement formed joints without arris protection.



UNIRAIL Screed Rail

UNIRAIL 40-60 and 70-120 are a cost-efficient screed rail system produced by precision forming from galvanized high-strength steel, providing excellent dimensional tolerances and stability during screeding operation. It is suitable for internal and external applications.

The system consists of the basic UNIRAIL 40-60 Screed Rail. The UNIRAIL model 70-120 can be created by adding installation feet to the UNIRAIL 40-60. The UNIRAIL 70-120 enables the depth of the screed to be continuously adjusted up to 120 mm.

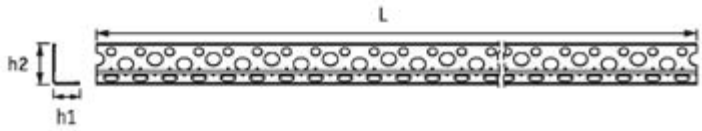
UNIRAIL 40-60 and 70-120 provide a guide for the screeding mechanism, which can be a manually operated straight edge, vibrating screed machine with striker tubes. The UNIRAIL 40-60 and 70-120 permit the accurate passage of the screeding mechanism along their length, and the screed material placed between the rails is accurately leveled off to the correct height and flatness.

A plastic top extender can be fitted to the top edge of the rail to provide a smooth, non-abrasive running face for any screeding mechanism and also to increase the overall height of the UNIRAIL 40-60 or 70-120.

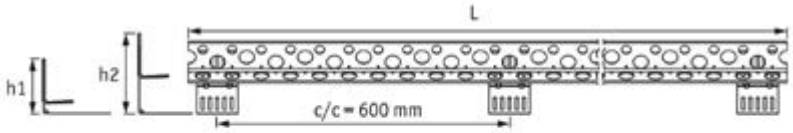
Materials

Component	Material
Screed Rail	S250GD+Z275
Installation feet	S355MC
Top Extender	PVC DVE 252/007 Black

Dimensions



Model	Height h1, h2 [mm]	Length L	Weight [kg]	Advisable slab depth [mm]
UNIRAIL 40-60	40, 60	2700, 3000	1.01	40 - 100



Model	Height h1, h2 [mm]	Length L	Weight [kg]	Advisable slab depth [mm]
UNIRAIL 70-120	70~90, 90~120	2700, 3000	1.13	70-120 (135 mm with 15 mm Top Extender)

UNIFORM Screed Rail

UNIFORM 140 is a prefabricated leave-in-place formwork system designed for constructing free-movement joints or restrained-movement joints in concrete slabs and deep-section screeds, consisting of permanent formwork, a load transfer system, a top extender, and adjustable installation feet. The formwork is produced by roll forming from galvanized high-tensile steel. The load transfer system is attached to the formwork by plastic connection elements.

The system ensures reliable load transfer at joints with openings of up to 15 mm wide and is suitable for use on slab depths from 150 mm to 180 mm when used to form contraction joints in concrete slabs and screeds. For expansion joint construction, it is suitable for slab depths from 150 mm to 200 mm.

The UNIFORM 140 system can be supplied as a fully assembled ready-to-use product, or in kit form, for simple assembly at the work site. The kit includes all of the required components, assembly tools, and assembly instructions.

The UNIFORM 140 permits free slab movements caused by drying shrinkage and thermal variations in both longitudinal and perpendicular directions of the slab plane. It also transfers vertical loads between adjacent slabs and minimizes vertical displacement of the slabs. The standard, dedicated load transfer system is accomplished by utilizing discrete plate dowels made of high-strength steel, moving within rigid plastic release sleeves. The UNIFORM 140 formwork also allows the use of alternative load transfer systems, such as round- and square-bar dowels of up to 20 mm format, or tie bars for forming restrained-movement and tied joints.

Dowel types

UNIFORM is supplied with different types of plate dowel systems at different geographical markets:

- **TDC 5** and **TDC 6** – Europe, Russia
- **TDR 6** – UK, Gulf, APAC, USA

Materials

Version / component	UNI 5-140-3000	UNI 6-140-3000	UNI 6-140-3000 EX
Formwork	S390GD+Z BS	S390GD+Z BS	S390GD+Z BS
Plate dowels	S355J2+N	S355J2+N	S355J2+N HDG
Sleeves	ABS, blue	ABS, green	ABS, green
Compressible foam	N/A	N/A	Miothene 30 kg/m^3
Adjustable installation feet	S355MC	S355MC	S355MC
Top extender	PVC DVE 252/007 Black	PVC DVE 252/007 Black	PVC DVE 252/007 Black

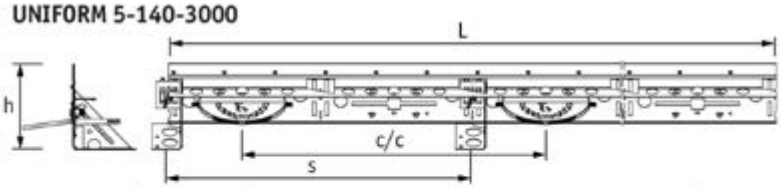
Dimensions

Dowel type	TDC 5 - TERADOWEL circular 5 mm
Thickness **t**	5 mm
Diameter **d**	150 mm
Sleeve color	Blue
Advisable joint opening	0~10 mm

Dowel type	TDC 6 - TERADOWEL circular 6 mm
Thickness **t**	6 mm
Diameter **d**	150 mm
Sleeve color	Green
Advisable joint opening	0~15 mm

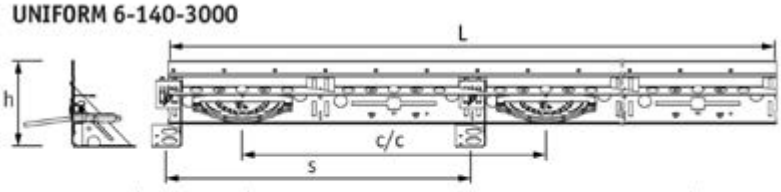
Dowel type	TDR 6 - TERADOWEL rectangular 6 mm
Thickness **t**	6 mm
Dimension **w** x **l**	150 x 135 mm
Sleeve color	Green
Advisable joint opening	0~15 mm

UNIFORM 5-140-3000



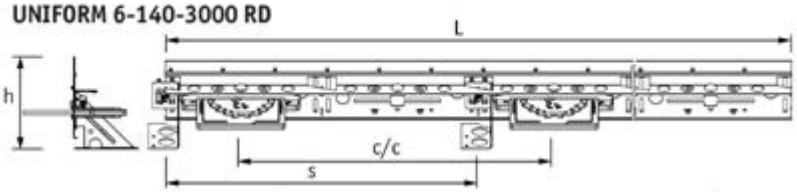
Type	Dowel type	Height **h**	Length **L**	Dowel centres **c/c**	Feet spacing **s**	Weight
		[mm]				[kg]
UNI 5-140-3000	TDC 5	140–165	3000	600	600	9.9
	Advisable slab depth: 150–165 mm (180 mm with 15 mm top extender)					

UNIFORM 6-140-3000



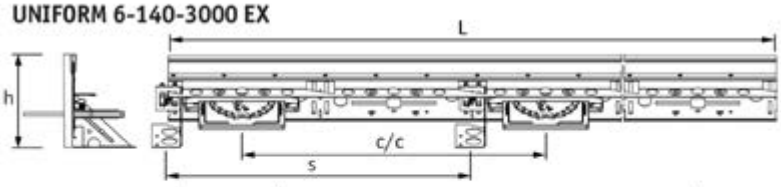
Type	Dowel type	Height **h**	Length **L**	Dowel centres **c/c**	Feet spacing **s**	Weight
		[mm]				[kg]
UNI 6-140-3000	TDC 6	140–165	3000	600	600	10.7
	Advisable slab depth: 150–165 mm (180 mm with 15 mm top extender)					

UNIFORM 6-140-3000 RD



Type	Dowel type	Height **h**	Length **L**	Dowel centres **c/c**	Feet spacing **s**	Weight
		[mm]				[kg]
UNI 6-140-3000 RD	TDR 6	140–165	3000	600	600	10.7
	Advisable slab depth: 150–165 mm (180 mm with 15 mm top extender)					

UNIFORM 6-140-3000 EX



Type	Dowel type	Height **h**	Length **L**	Dowel centres **c/c**	Feet spacing **s**	Weight
		[mm]				[kg]
UNI 6-140-3000 EX	TDR 6	140–165	3000	600	600	12.5
	Advisable slab depth: 150–165 mm (180 mm with 15 mm top extender)					

PERMANENT JOINT FILLERS

Permanent Joint Fillers are systems for filling joint gaps in concrete floors. This system instantly replaces the traditional joint fillers used in concrete floors and slab joint gaps. It also removes the need to reseal joints, minimizes floor downtime, and improves resistance to damage at the joint arrises.

JOINTSAVER Permanent Joint Filler

The JOINTSAVER is placed on the joint gap under compression and it pushes at the side of the joint gap. Therefore, as the gap widens, the compressed JOINTSAVER will expand to remain in contact with the sides, thereby permanently filling the joint gap. The JOINTSAVER comes in several types and sizes, and can be used for joint gaps from 10 mm up to 40 mm wide, whether they be formed concrete slabs, formed steel armored joints, internal or external joints, and also architecturally decorative joints.

The special compressible closed-cell foam center strip has high regenerative properties and excellent resistance to most contaminants usually found on floors, such as oils, petrol, solvent, acids, and UV light, as well as being fire retardant.

The JOINTSAVER is suitable for applications such as internal and external free-movement joints, cold store joints, seismic joints, concrete arris repairs, and decorative applications. The joint can be instantly trafficked by foot, pallet trucks, and fork trucks.

The JOINTSAVER range consists of 3 types of products serving different joint gap widths and applications: the JOINTSAVER Standard, the JOINTSAVER Extra Wide, and the JOINTSAVER Gripper.

Materials

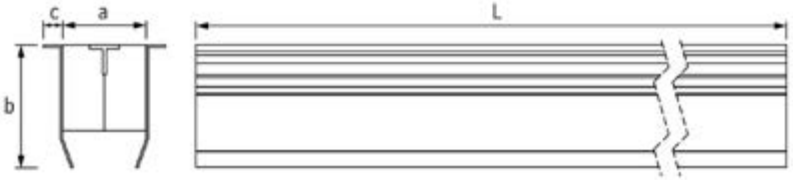
Version	Side Plate	Foam Insert
JOINT SAVER Standard	Stainless Steel Grade 304	Compressible closed cell foam
JOINT SAVER Extra wide	Stainless Steel Grade 304	Compressible closed cell foam
JOINT SAVER Gripper	Corrosion resistant UltraSTEEL®	Compressible closed cell foam

Dimensions

JOINTSAVER Standard

Version	Width a	Height b	Lip c	Length L
JOINT SAVER Standard 1	17 mm	35 mm	6 mm	2000 mm
JOINT SAVER Standard 2	24 mm	35 mm	6 mm	2000 mm

JOINTSAVER Extra Wide



Version	Width a	Height b	Lip c	Length L
JOINT SAVER Extra wide 1	34 mm	52 mm	6 mm	2000 mm
JOINT SAVER Extra wide 2	41 mm	52 mm	6 mm	2000 mm

JOINTSAVER Gripper

Version	Width a	Height b	Length L
JOINT SAVER Gripper 1	17 mm	42.5 mm	2000 mm
JOINT SAVER Gripper 2	24 mm	42.5 mm	2000 mm
JOINT SAVER Gripper 3	34 mm	42.5 mm	2000 mm
JOINT SAVER Gripper 4	41 mm	42.5 mm	2000 mm

LOAD TRANSFER SYSTEMS

Dowel Systems provide high efficiency load transfer functionality through the joint at formed and sawn free-movement contraction joints.

TERADOWEL and ULTRADOWEL Load Transfer Systems

The TERADOWEL and ULTRADOWEL systems comprise discrete steel-plate dowel and plastic release sleeves. The sleeve contains nails for fixing to the timber formwork and the dowel slot is covered by tape to prevent cement paste entering when the concrete is poured. The inner bracings in the sleeve prevent deformation or collapse of the horizontal sleeve walls caused by the concrete pressure in deep slabs and allow problem-free insertion of the dowel into the sleeve after formwork stripping.

The TERADOWEL or ULTRADOWEL Sleeves are installed into position on the timber formwork at specific intervals and at a height of half of the slab depth, before the formwork is installed and the slab is cast. The slab containing the sleeves is poured and, after the concrete has hardened sufficiently, the timber formwork is stripped. TERADOWELS or ULTRADOWELS are then inserted into the slots of the cast-in sleeves and the second pour is performed.

TERADOWELS and ULTRADOWELS permit free slab movements caused by drying shrinkage and thermal variations in both longitudinal and perpendicular directions of the slab plane, thereby eliminating the principle cause of shrinkage cracks at the joint, and minimizing vertical displacement of the slabs.

The available models are the following in different geographical markets:

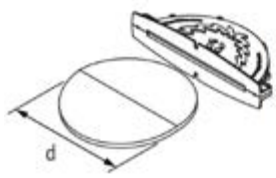
- TERADOWEL **TDC 6** and ULTRADOWEL **UDR 8** – Europe, Russia
- TERADOWEL **TDR 6** and ULTRADOWEL **UDR 8** – UK, Gulf, USA
- TERADOWEL **TJD-R6**, **TJD-R8** and **TJD-R12** - APAC

Materials

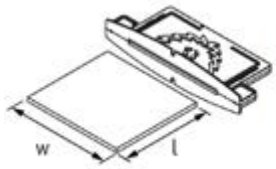
Dowels		Sleeves	
Version	Material	Version	Material
TERADOWEL circular **TDC 6**	S355J2+N	TERADOWEL Sleeve Circular **TSC 6**	ABS
TERADOWEL circular **TDC 6 HDG**	S355J2+N HDG	TERADOWEL Sleeve Circular **TSC 6**	ABS
TERADOWEL rectangular **TDR 6**	S355J2+N	TERADOWEL Sleeve Rectangular **TSR 6**	ABS
TERADOWEL rectangular **TDR 6 HDG**	S355J2+N HDG	TERADOWEL Sleeve Rectangular **TSR 6**	ABS
ULTRA dowel rectangular **UDR 8**	S700MC	ULTRADOWEL Sleeve Rectangular **USR 8**	ABS
ULTRA dowel rectangular **UDR 8 HDG**	S700MC HDG	ULTRADOWEL Sleeve Rectangular **USR 8**	ABS

HDG = hot dip galvanized. Standard for black steel EN 10025.

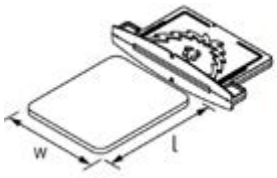
Dimensions



Dowel type	TDC 6 - TERADOWEL circular 6 mm
Thickness **t**	6 mm
Diameter **d**	150 mm
Sleeve color	Green
Advisable joint opening	0~15 mm



Dowel type	TDR 6 - TERADOWEL rectangular 6 mm
Thickness **t**	6 mm
Dimension **w x l**	150 x 135 mm
Sleeve color	Green
Advisable joint opening	0~15 mm



Dowel type	UDR 8 - ULTRADOWEL rectangular 8 mm
Thickness **t**	8 mm
Dimension **w x l**	145 x 175 mm
Sleeve color	Dark Grey
Advisable joint opening	15~20 mm

Resistances

Please refer to the Technical Manual.

DOWELCRADLE Load Transfer System

DOWELCRADLEs are designed for use in concrete slabs or pavements where a sawn or other induced free movement contraction joints are required to be created. Dowels and sleeves are held by the cradle, aligned and suspended in position, in the middle of the slab at required dowel spacing, thereby ensuring correct positioning and alignment of the individual dowels and sleeves. Also allows extremely quick and simple to installation of the system by one person.

The system is suitable for internal and external slabs with depths from 125 mm to 250 mm slab depths. Other sizes can be designed according to requirements of the client. It is available in Plain Steel and Hot Dip Galvanized finish.

DOWELCRADLE with round bar dowels permits one directional slab movement. The load transfer system is accomplished by utilising high strength steel round bar dowels, moving within thin plastic shrink wrap sleeves.

DOWELCRADLE with flat plate dowels permits two directional slab movement both in longitudinal and perpendicular directions of the slab plane, and minimising vertical displacement of the slabs. The load transfer system is accomplished by utilising high strength steel discrete plate dowels, moving within rigid plastic release sleeves.

DOWELCRADLEs are supplied at APAC market.

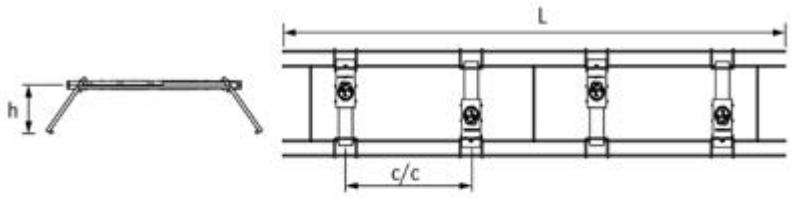
Materials

Version	Cradle	Dowels	Sleeves
DOWELCRADLE FDC	Q195	Q345D	ABS
DOWELCRADLE FDC HDG	Q295	Q345D HDG	ABS
DOWELCRADLE RDC HDG	Q395	Q345D HDG	PE

HDG = hot dip galvanized.

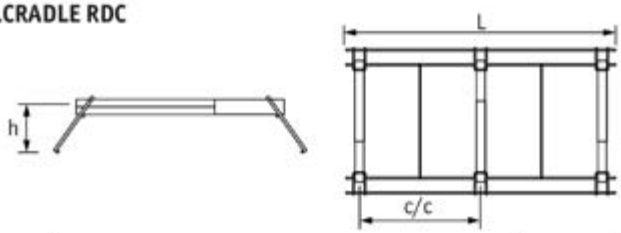
Dimensions

DOWELCRADLE FDC



Type	Height h	Dowel type	Dowel centres c/c [mm]	Length L	Weight [kg]	Advisable slab depth [mm]
FDC 6-450-63	63	Flat plate dowel 6 x 50 x 500	450	1800	5.2	125
FDC 6-450-75	75				5.3	150
FDC 10-450-63	63	Flat plate dowel 10 x 50 x 500	450	1800	6.9	125
FDC 10-450-75	75				7.0	150
FDC 10-450-88	88				7.0	175
FDC 10-450-100	100				7.1	200
FDC 10-450-113	113				7.1	225
FDC 10-450-125	125				7.2	250

DOWELCRADLE RDC



Type	Height h	Dowel type	Dowel centres c/c [mm]	Length L	Weight [kg]	Advisable slab depth [mm]
RDC32-450-63	63	Round bar dowel Ø32 x 450	450	1000	10	125
RDC32-450-75	75				10	150
RDC32-450-88	88				10	175
RDC32-450-100	100				10	200
RDC32-450-113	113				10	225
RDC32-450-125	125				10	250

Resistances

Please refer to Technical Manual.

HIDDEN CORBELS

The PCs Corbel system provides support to steel and composite beams and to concrete beams equipped with PC Beam Shoes and transfers their support reactions to concrete walls and columns. A light corbel system is suitable for supporting walls and intermediate landing of staircases both in cast-in-situ and precast frames.

COLUMN CORBELS

Peikko PCs Hidden Corbel is composed of a column component to be installed in the column and an adjustable bolted bracket. The system, offering superior on-site adjustability, enables straight precast molds. Peikko PCs Corbels are used in precast concrete beams with PC Beam Shoes. The system also suits steel beams and composite beams with suitable end plates. This hidden column corbel system is a natural partner for DELTABEAM®.

High connection resistance can be achieved with small cross sections.

PCs Corbel

PCs Corbels are designed for connecting different kinds of beams: precast concrete, steel, or composite beams, to columns or walls. The system enables connecting as many beams to the columns as the cross section allows.

PCs Corbels are cast in the middle of the column or wall and PCs UP Corbels to the upper part of the same. Use PCs LOCK for safe continuous beam installation on site.

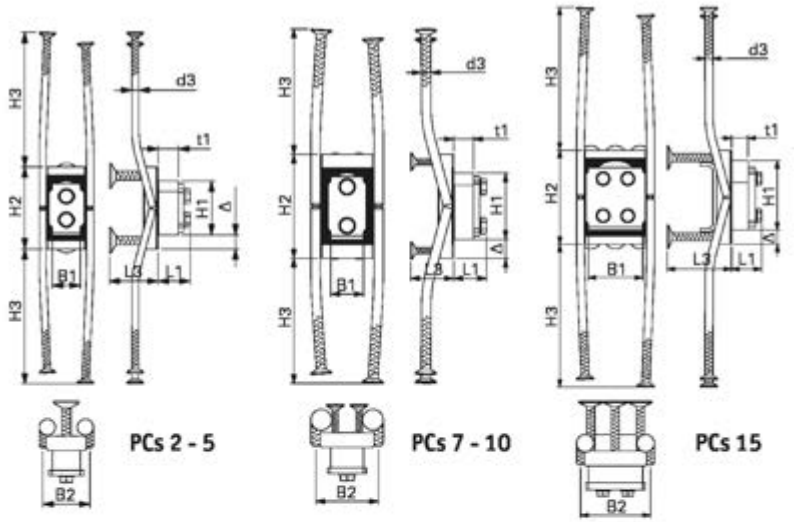
Approvals

Denmark: Statement, use of PCs Corbel in Denmark
Finland: BY 5 B N:o 342 *(national)*
Finland: BY 5 B-EC 2 N:o 25 *(EC2-NA)*
Netherlands: KOMO® K90198/01
Poland: AT-15-7911/2015
Russia: POCC FI.AB28.H16302

Materials

	material	standard
Plates	S355J2+N S355J0	EN 10025-2 EN 10025-2
Ribbed bars	B500B A500HW BSt500S	SFS 1268, EN 10080 SFS 1215, EN 10080 DIN 488, EN 10080
Bolts	property class 10.9	EN ISO 4014
Washers	property class 300 HV	EN ISO 14399-6

Dimensions



		PCs 2	PCs 3	PCs 5	PCs 7	PCs 10	PCs 15
H1		155	155	205	225	280	280
L1		76	92	112	112	117	122
B1		60	80	90	110	145	220
t1		45	55	65	65	65	65
bolts		M16x100	M24x120	M30x145	M30 x 145	M30 x 150	M30 x 155
Δ	[mm]	27,5	40	55	62	50	58
H2		210	235	315	350	380	380
H3		397	386	430	423	578	578
L3		125	140	150	145	160	260
B2		116	135	150	212	222	282
d3		16	20	25	32	32	32
weight	[kg]	12.7	21.1	37.6	57.9	84.9	124.4
color							

Resistances

Please refer to Technical Manual in Instructions and specifications.

PC Beam Shoe

PC Beam Shoes are used as the counterpart for PC Corbels for easy installation of both prestressed and non-prestressed precast concrete beams to columns. There are two different models: Low for beam flange heights < 60 mm and High for > 60 mm.

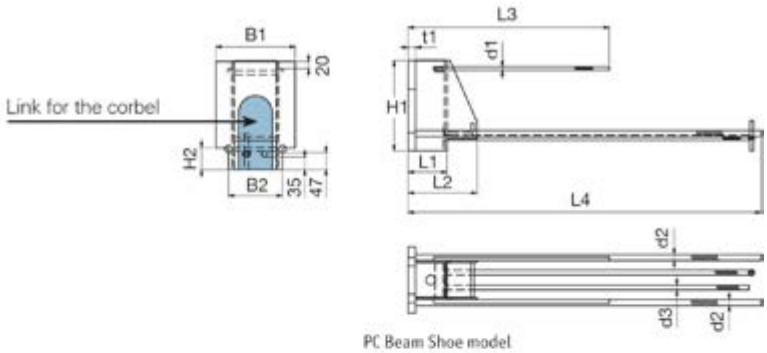
Approvals

Finland: BY 5 B N:o 334 *(national)*
Finland: BY 5 B-EC 2 n:o 15 *(EC2-NA)*
Netherlands: KOMO® K90198/01
Poland: AT-15-7911/2015

Materials

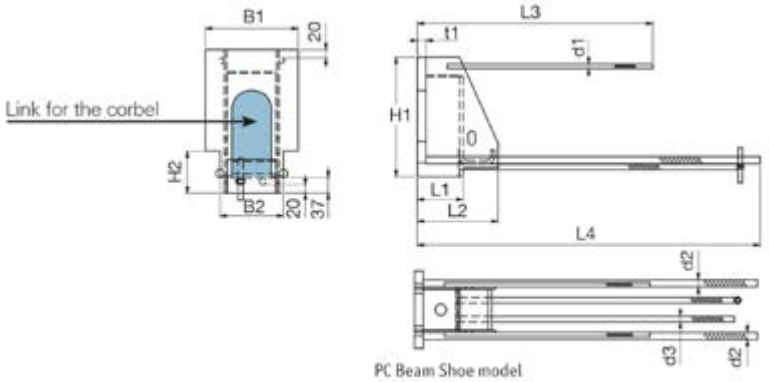
	material	standard
Plates	S355J2+N S355J0	EN 10025-2 EN 10025-2
Ribbed bars	B500B A500HW BSt 500 S	EN 10080 EN 10080 DIN 488

Dimensions



PC Beam Shoe model

		PC 2-L	PC 3-L	PC 5-L	PC 7-L	PC 10-L	PC 15-L
H1		240	270	300	340	410	410
H2		60	60	60	60	60	60
B1		180	190	220	240	270	389
B2		150	150	150	154	220	343
L1		95	110	130	130	135	135
L2	[mm]	155	170	230	235	315	315
L3		530	535	670	670	915	835
L4		770	1135	1175	1290	1290	1830
t1		15	20	25	25	25	25
d1		10	10	12	12	16	16
d2		16	16	20	20	25	25
d3		16	16	16	20	25	25
weight	[kg]	12,6	17,4	28,3	35,5	58,5	89,3
color							



PC Beam Shoe model

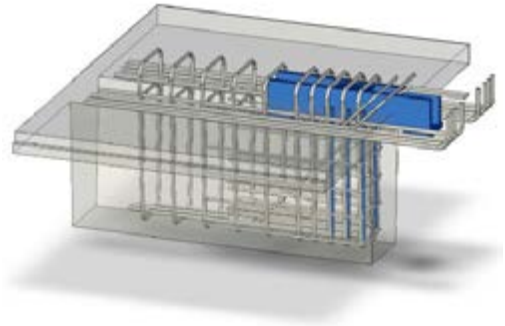
		PC2-H	PC3-H	PC5-H	PC7-H	PC10-H	PC 15-H
H1		280	310	340	380	450	450
H2		100	100	100	100	100	100
B1		180	190	220	240	270	389
B2		150	150	150	154	220	343
L1		95	110	130	130	135	135
L2	[mm]	155	170	230	235	315	315
L3		530	555	670	670	915	835
L4		675	960	975	1140	1145	1630
t1		15	20	25	25	25	25
d1		10	10	12	12	16	16
d2		16	16	20	20	25	25
d3		16	16	16	20	25	25
weight	[kg]	12,3	16,5	26,8	34,3	59,0	91,8
color							

Resistances

Resistances according to corresponding PCs Corbel.

SLAB CORBELS

PBH Corbels, easily dimensioned with design tables, are essential steel assemblies allowing TT slabs, hutchplates and ancillary beams to be placed on supporting beams without the necessity of girder flanges or notched ends. Furthermore, no additional installation or assembly support is needed.



PBH Corbel

The PBH assembly mainly consists of two vertical steel plates mutually connected by bearing plates and top plates to create a horizontal steel beam of open cross section bridging the gap between the head of a TT slab and the girder. During istallation state, the dead loads of the precast concrete element and the in situ topping are carried by the PBH corbel and transfered from the TT-slab to the supporting structure. In final state, when the in situ topping is hardened, the PBH corbel and the concrete slab provide a certain share of the total capacity of the construction. The total capacity of the construction results from the bearing capacity of the PBH corbel in installation state and the bearing capacity of the slab.

Approvals

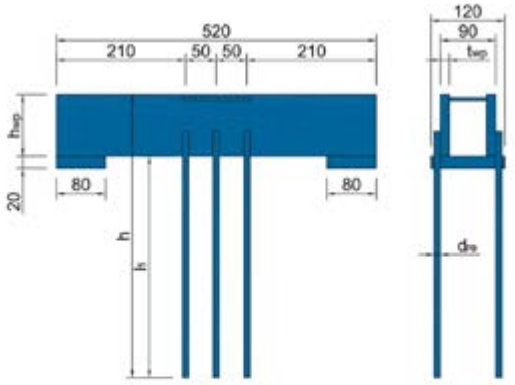
Germany: S-N/160014
Russia: РОСС FI.AB28.H16302

Materials

	material
Plates	S355, S235
Reinforcing steel	B 500
In-situ concrete	≥ C20/25
Precast	≥ C35/45

The construction provides a fire resistance of 90 minutes.

Dimensions



	h_{wp}	t_{wp}	h	l_1 (*)	d_{re}
			[mm]		
PBH 1	100	15	410	310	12
PBH 2	100	20	490	390	12
PBH 3	120	15	610	490	12
PBH 4	120	20	620	500	14

Resistances

Please refer to Technical Manual.

HANGERS

The PETRA Hollow-core Slab Hanger is used to support a hollow-core slab in the slab opening. PETRA is generally supported by two parallel slabs, and one or more slabs are installed onto its front plate. The joint between the hollow-core slabs and PETRA should be cast before any load is put on the structure. The beam formed by PETRA and the grouting transfers loads from the slab that needs to be supported to supporting slabs.

HOLLOW-CORE SLAB HANGERS

PETRA Slab hanger is a steel plate structured hanger for a hollow-core slab that needs to be supported between the main support points. The hanger is used for making openings of any size into a hollow-core slab floor. PETRA distributes the load of the slab into the adjacent slabs. Standard sizes are available up to slab thickness of 500 mm. Up to 10 m spans are easily supported with standard PETRAs.

PETRA Slab Hanger

PETRA and PETRA Strong slab hangers are designed to support hollow-core slabs up to 500 mm thick for making openings.

Special models available for hollow-core slabs with bathroom recesses and for cases where adjacent slabs are of different height.

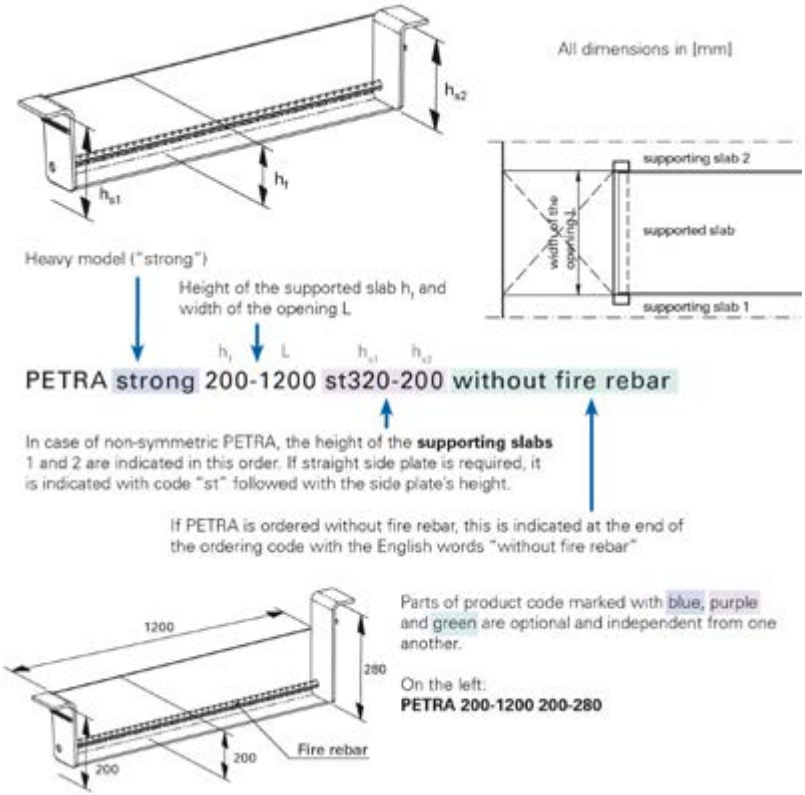
Approvals

Denmark: Statement, use of PETRA in Denmark
Finland: BY 5 B-EC 2 N:o 21 M1
Poland: AT-15-5360/2012

Materials

	Material	Standard
Plates	S355J2+N	EN 10025-2 (front plate)
	S355MC	EN 10149-2 (side plates)
Rebars	B500B	EN 10080, SFS 1268
	BSt 500S	DIN 488
	A500HW	EN 10080, SFS 1215

Dimensions



PETRA Slab Hangers are configured upon order. Please refer to the above naming instruction or the more detailed Technical Manual under Instructions and specifications.

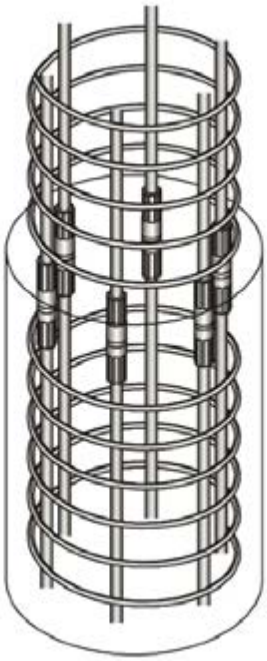
Resistances

Please see Technical Manual in Instructions and specifications.

REBAR COUPLING SYSTEMS

MODIX® Rebar Coupler is a pressed coupling system with threaded connection for rebar coupling. Threaded muffs are pressed to each bar for coupling. Loads are transferred via the muff threads from one bar to the next.

Rebar splicing can be avoided with rebar couplers and, if needed, all bars can be continued at the same cross section. The connection is easy to install and does not require special tools. Proper connection tightness can be inspected visually.



REBAR COUPLERS

MODIX® is a very safe and versatile rebar splicing system. The unique visual inspection system makes it easy to ensure that all connections are closed. Using the standard SM A and SM B connections, you can connect together any rebars from size 10 to 40 mm.

MODIX Rebar Coupler

Peikko MODIX® is designed to be the most safe and flexible rebar splicing system. The unique visual inspection systems makes it safe and easy to be sure all connections are really closed. With the standard connections SMA and SMB you can connect all rebars from size 10 to 40 mm.

Approvals

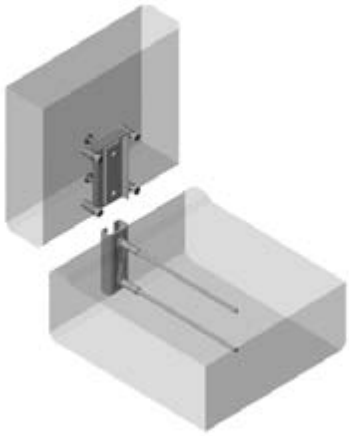
Austria: R-2.1.9-16-15078
Finland: BY 4 B N:o 23
Germany: Z-1.5-177
Hungary: A-94/2015
Netherlands: K22892
Poland: AT-15-8087/2013
Russia: RU.MCC.142.313.28277

Materials

MODIX® muffs are produced under using a special grade steel for the muffs.

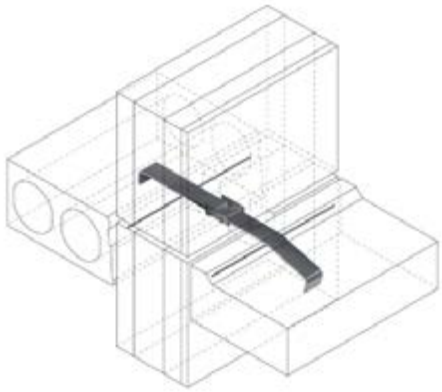
BALCONY CONNECTIONS

Balcony connectors are used for connecting balconies to the other structures of a building. PS Balcony Slab Connector anchors the supported balcony slab to the structures allowing vertical movement due to heat. The structure can be disassembled, which enables an on-site bolted connection. The P4X Slab Connector is used to install a railing firmly to a balcony. A concrete parapet with extensive adjustment possibilities can be achieved by combining a slab connector and a parapet connector.



SUPPORTED SLAB CONNECTORS

Peikko's Supported Slab Connectors are hinged stainless steel components. They enable vertical movement of balconies thus preventing cracking. Simultaneously, they transfer horizontal loads via a hinge from balcony slabs to concrete floors. Easy installation by a bolt connection.



PS Balcony Slab Hinge

PS Balcony Slab Hinge transfers horizontal loads from balcony to the building, while enabling vertical movements up to 20 mm. Variable sizes to fit most wall structures. One balcony requires normally two hinges.

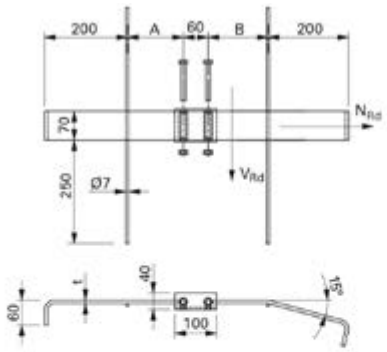
Approvals

Finland: BY 5 B-EC 2 n:o 35 *(EC 2 NA)*
Finland: BY 5 B n:o 353 *(National)*
Russia: РОСС FI.AB28.H16302

Materials

Plates: 1.4301
Sleeve: 1.4301
Ribbed bars: B600KX

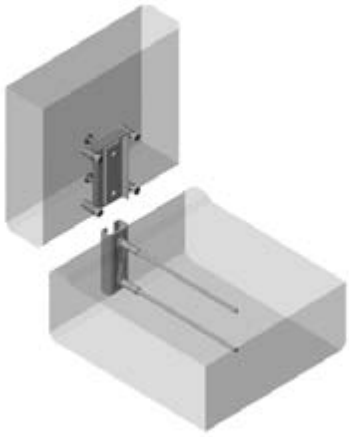
Dimensions



	t	A [mm]	B	N_{Rd} [kN]	V_{Rd} [kN]	weight [kg]
PS 110	8	110	170	33.2	8.8	4.7
PS 170	8	170	170	33.2	8.8	5.0
PS 200	10	200	200	33.2	8.7	6.2
PS 230	10	230	230	33.2	8.1	6.5

BALCONY PARAPET CONNECTORS

Peikko's parapet balcony connector is an anchoring system for safe fixing of the parapet wall to the balcony slab. It can be used with concrete, steel or glass parapets and it provides a rust-free connection without welding.



P4X Balcony Parapet Connector

With P4X parapet connection, the reinforced concrete parapet is fastened to reinforced concrete balcony slab. P4X is also used with glass parapets/balcony glazing according to glass parapet producer details. The parapet part has screws in which the parapet is stiffened against the balcony slab.

Approvals

Finland: BY 5B EC 2 n:o 29

DELTABEAM

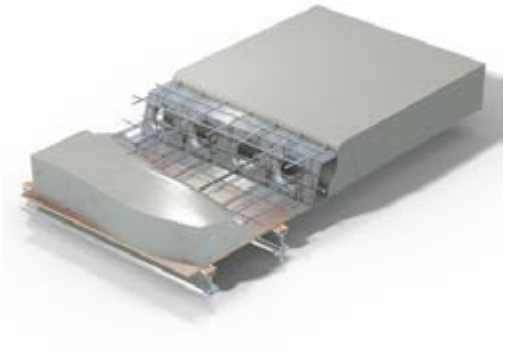
DELTABEAM® is a superior slim-floor system for multi-storey buildings of any type from low-rise to high-rise. Its composite action between steel and concrete allows for creative structures with large open spaces.

DELTABEAM® has proven through multiple fire tests its excellent ability to resist fire without any additional protection. Its shallow design decreases the building's floor-to-floor height along with eliminating conflicts with HVAC systems. DELTABEAM® has been used in concrete and steel structures in over 10,000 buildings worldwide.

DELTABEAM WITH CAST-IN-SITU FLOORS

DELTABEAM® can also be used with on-site casting of concrete floors. In these cases DELTABEAM® should be rather straight than precambered. The formwork should be placed just under the bottom flange of the beam. In cases of long spans DELTABEAM® can alternatively be placed under the bottom surface of concrete floor. Peikko's DELTABEAM® Composite Beams are CE marked.

DELTABEAM® Composite Beams make slim floors possible also in cast-in-situ construction!



DELTABEAM IN RENOVATION

Use DELTABEAM® for building completely new floor structures in existing buildings or for rebuilding an old structure. Thanks to its lightness, DELTABEAM® is the ideal solution for adding more stories to a building. It helps to minimize the total structural weight and enables construction-phase transfers using only forklifts. The low-height DELTABEAM® makes it easy to adapt the building's story height to the level of the stories of the adjacent buildings. Peikko's DELTABEAM® Composite Beams are CE marked.

DELTABEAM INFO FOR DESIGNERS

To make the designing of DELTABEAM® Composite Beams easier, we have collected information for designers on our website at www.peikko.com. On our website, you will find a technical manual, installation instructions and a connection detail library for preparing drawings. In case of any problems, our Technical Assistance will be happy to help you regarding DELTABEAM® Composite Beams. Peikko's DELTABEAM® Composite Beams are CE marked.

DELTABEAM product information

DELTABEAM® is designed to be used as a structural element combined with all general concrete slab types: hollow-core slab, filigran slabs, composite steel decking, trapezoidal steel decking slabs, and cast-in-situ concrete slabs. It enables the usage of shallow element structures and strengthens the frame structure inside the slab.

DELTABEAM® can have a fire class rating as high as R120 without additional protection.

Approvals

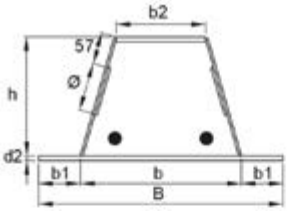
Czech: 204/C5/2006/060-025293 / 060-025292
Finland VTT-RTH-03040-07 (fi, en)
Germany: Z-26.2-49
Hungary: A-702/2010
Poland: AT-15-8053/2014
Russia: РОСС FI.Ar93.н00522
Slovakia: TO - 08/0021
Sweden: SBS D/002
UAE: TAC-No-145-2015
UK: BBA No 05/4204

CE Marking

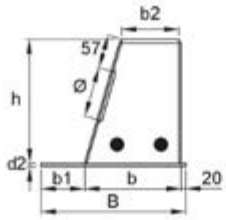
Materials

	Material	Standard
Plates	S420 S355J2+N	10025-3, EN 10149-2 EN 10025-2
Ribbed bars	A500HW	SFS 1215

Dimensions



b	B	b1*	b2	d2	h	Ø**
			[mm]			
D20-200	395	97,5	100	5-25	200	80
D20-300	495	97,5	180	5 - 25	200	80
D20-400	660	130	278	5 - 25	200	80
D22-300	495	97,5	170	5 - 25	220	80
D22-400	660	130	270	5 - 25	220	80
D25-300	495	97,5	155	5 - 25	250	150
D25-400	660	130	255	5 - 25	250	150
D26-300	495	97,5	148	5 - 25	265	150
D26-400	660	130	245	5 - 25	265	150
D30-300	495	97,5	130	5 - 25	300	150
D30-400	660	130	230	5 - 25	300	150
D32-300	495	97,5	110	5 - 25	320	150
D32-400	660	130	210	5 - 25	320	150
D37-400	660	130	180	5 - 25	370	150
D37-500	760	130	278	5 - 25	370	150
D40-400	660	130	180	5 - 25	400	150
D40-500	760	130	278	5 - 25	400	150
D50-500	760	130	230	5 - 25	500	150
D50-600	860	130	330	5 - 25	500	150



b	B	b1*	b2	d2	h	Ø**
			[mm]			
DR20-215	335	100	148	5 - 25	200	80
DR20-245	365	100	180	5 - 25	200	80
DR22-250	370	100	180	5 - 25	220	80
DR25-260	380	100	180	5 - 25	250	150
DR26-230	350	100	148	5 - 25	265	150
DR26-260	380	100	180	5 - 25	265	150
DR26-290	410	100	210	5 - 25	265	150
DR26-325	445	100	245	5 - 25	265	150
DR30-270	390	100	180	5 - 25	300	150
DR32-250	370	100	148	5 - 25	320	150
DR32-285	405	100	180	5 - 25	320	150
DR32-310	430	100	210	5 - 25	320	150
DR32-365	485	100	245	5 - 25	320	150
DR37-325	475	130	210	5 - 25	370	150
DR40-295	445	130	180	5 - 25	400	150
DR50-350	500	130	210	5 - 25	500	150

*standard size unless the customer otherwise defines (minimum 20 mm).
**c/c distribution for web holes is always 300 mm.

STEEL STRUCTURES

Peikko Structural Frame is a composite construction frame consisting of DELTABEAM® Composite Beams and composite columns. It is eminently suited as a frame for office and commercial buildings as well as public buildings.

We can assemble the delivery to meet the customer's requirements from designing the frame to installation.

Peikko Frame systems provide customers with several benefits:

Composite action

A true composite construction frame enables slender and light structural solutions that provide savings in volume and costs.

On-site savings

Standardized and clear connection details allow for fast and easy frame installation, providing considerable savings in time.

Planning

Through our own planning and standardized connection solutions, we are able to make the correct preselections and create an efficient planning schedule.

Competitive price

Modern production technology combined with a correctly optimized frame solution enables a competitive price.

Quality

Our products and production plants are subject to external inspectorates. A quality manual is included in our delivery. Peikko's Steel Structures are CE marked.

PEIKKO GROUP CORPORATION: GENERAL TERMS AND CONDITIONS OF SALE 2011-2012

1. Applicability

These general terms and conditions of sale shall be applied to deliveries of Products to the Customer. “Peikko” shall mean Peikko Group Oy or a company belonging to the same group with Peikko Group Oy. “Product(s)” shall mean products sold or offered by Peikko to the Customer. “Customer” shall mean a company or person that purchases Products from Peikko.

These general terms and conditions shall be applied to all sales agreements between Peikko and Customer (“Parties”) regarding the Products, including all future sales agreements between the Parties and concerning the Products, even if the Parties will not expressly agree on application of these general terms and conditions.

These general terms and conditions shall take precedence over any other written or oral conditions and over any conditions presented by the Customer, unless otherwise agreed between the Parties in writing.

2. Delivery term

Unless expressly otherwise agreed, the Products will be delivered Ex Works Peikko’s Factory (as per Incoterms 2000 or its subsequent version).

3. Prices, payment term

Unless expressly otherwise agreed by the Parties, the agreed price shall be net price exclusive of VAT, i.e., it does not contain packing-, transport-, insurance-, or other similar costs, nor VAT that will be added to the price of the delivery.

Unless otherwise agreed, the Customer shall pay the total purchase price within 14 days from the date of the invoice.

4. Retention of title

Title to the sold Products shall remain with Peikko until the purchase price with possible interest has been fully paid.

5. Anticipated breach

In the event there is a justified reason to doubt the Customer’s liquidity, due to the facts that have arisen after conclusion of the sales agreement, Peikko may cease performance of its obligations, for example by preventing delivery of the Products to the Customer or by preventing

installation or other use of already delivered Products, until the purchase price has been fully paid or the Customer has placed an acceptable security.

6. Inspection of the Products

The Customer shall duly inspect the delivered Products without delay and in any event not later than within seven (7) days after the delivery. Within the same time the Customer shall familiarize itself with the delivery lists, written Product descriptions and other written material concerning the Products as well as with available Product information at Peikko's website www.peikko.com The Customer shall make a written complaint concerning defective Products without delay and in any case not later than within seven (7) days upon delivery of the Products. Otherwise, the delivery is deemed to be accepted by the Customer.

Before installing, connecting or otherwise using the Products, the Customer shall once more carry out duly inspection of the Products.

7. Liability of Peikko for delayed delivery

In the event that the delivery is in delay, the Customer shall be entitled to liquidated damages equal to 0.5% of the purchase price of the delayed Products per each full week of delay, provided that the maximum amount of liquidated damages shall be 5% of the purchase price.

Peikko's liability for delayed deliveries shall be limited to the payment of liquidated damages. In no event shall Peikko be liable for any additional damages, unless Peikko has been guilty for intentional misconduct or gross negligence.

8. Liability of Peikko for non-conformity of the Products

Should the delivered Product be non-conforming (and provided that the Customer has given a notice of the lack of conformity in compliance with Clause 6), Peikko may at its option and with its own cost either repair the non-conforming Products, replace the Products with conforming Products or reimburse to the Customer the price paid for the non-conforming Products and other provable costs of the Customer.

Should the agreed delivery be in delay due to non-conformity of the Products, the Customer shall be entitled to liquidated damages equal to 0.5% of the purchase price of the non-conforming Products per each full week of delay, provided that the maximum amount of liquidated damages shall be 5% of the purchase price.

Peikko's liability for non-conforming Products shall be limited to the payment of liquidated damages. In no event shall Peikko be liable for any additional damages, unless Peikko has been guilty for intentional misconduct or gross negligence.

9. Limitation of liability

Peikko's liability for delay, for non-conformity of Products for other causes of any direct, indirect or any other damage, shall be limited to the purchase price agreed by the Parties.

In no event shall Peikko be liable for lost profit or any damage caused by loss of production, loss of turnover, or by interruption of business.

The limitation of liability is not valid should Peikko have been guilty for intentional misconduct or gross negligence.

10. Force majeure

A Party is not liable for damage or delay in so far as the damage or delay was due to impediment beyond his control, and provided that (a) he could not reasonably be expected to have taken into account the impediment at the time of the conclusion of the sales agreement, and (b) he could not reasonably have avoided or overcome its effects.

Such an impediment can be, for example; (i) strike, lockout, boycott or other action of workmen also when a Party is itself an object or party thereof; (ii) fire or discontinuance of energy production, delivery of water, electricity or heating; (iii) exceptional weather condition; (iv) partial or total damage of machinery or plant; (v) lack of components, parts, raw materials or fuel; or, (v) discontinuance of common transport. Subcontractor's delay shall be deemed to constitute an acceptable force majeure situation should the subcontractors delay be due to circumstances described in this clause.

A Party shall inform the other Party of the event of force majeure as well as of the termination of the event of force majeure, as soon as reasonably possible.

In the event that the force majeure situation continues longer than three (3) months, both Parties have a right to terminate the sales agreement with immediate effect, and without liability.

11. Applicable law

The sales agreements concerning the Products concluded between the Parties shall be governed by the laws of Finland.

12. Dispute settlement

Any dispute, controversy or claim arising out of or relating to sales agreement concerning Products, or the breach, termination or validity thereof shall be finally settled by arbitration in accordance with the Arbitration Rules of the Central Chamber of Commerce of Finland. The place of arbitration shall be Helsinki.

Notwithstanding the aforesaid, Peikko may undertake legal proceedings in the district court of Helsinki, Finland.

PEIKKO OFFICES

Australia
Peikko Australia Pty Ltd
Level 9
Avaya House 123 Epping Road
North Ryde NSW 2113
Australia
Tel. +61 (2) 96 222 226
www.peikko.com.au

Austria
Peikko Austria GmbH
Zehentweg 6 6833 Weiler
Austria
Tel. +43 5523 521 210
Fax. +43 5523 521 2120
www.peikko.at

Belarus
FLLC Peikko Belrus
Betonji passage 19a-211b
Бетонный проезд 19а-211б
220036 Minsk Belarus
Tel. +375 17 200 57 06
Fax. +375 17 200 57 06
www.peikko.by

Bosnia and Herzegovina
Peikko Slovakia s.r.o.
92591 Kráľová nad Váhom 660
Slovakia
Tel. +385 (0) 99 647 2007
www.peikko.ba

Canada
Peikko Canada Inc.
955 Fernand Dufour G1M 3B2
Quebec City Canada
Tel. +1 418 263 2023
Fax. +1 418 263 2024
www.peikko.ca

China
Peikko Construction Accessories (Zhangjiagang) Co., Ltd
No. 9 Fuxin Rd. Zhangjiagang Economic Development Zone (North Region) JiangSu Province
215600 People's Republic of China
Tel. +86 512 58166601
Fax. +86 512 58166602
www.peikko.cn

Croatia
Peikko Slovakia s.r.o.
92591 Kráľová nad Váhom 660
Slovakia
Tel. +385 (0) 99 647 2007
www.peikko.com.hr

Czech Republic
Peikko Czech Republic s.r.o.
Saveljevova 18/1629 14700
Prague 4 Czech Republic
Tel. +420 244 466 217
Fax. +420 244 461 536
www.peikko.cz

Denmark
Peikko Danmark Aps
Hestehaven 21 N 5260 Odense S Denmark
Tel. +45 6611 1065
Fax. +45 6611 1025
www.peikko.dk

Estonia
Peikko Eesti OÜ
Kriidi 12 11415 Tallinn Estonia
Tel. +372 607 4285
Fax. +372 607 4283
www.peikko.ee

Finland
Peikko Finland Oy
PL 104 Voimakatu 3 15101
Lahti Finland
Tel. +358 20 707 511
Fax. +358 3 733 0152
www.peikko.fi

France
Peikko France SAS
Bâtiment AXE NORD 3ème étage
9-11 avenue Michelet 93400
Saint Ouen France
Tel. +33 1 4946 1315
Fax. +33 1 4820 5313
www.peikko.fr

Germany
Peikko Deutschland GmbH
Brinker Weg 15 34513 Waldeck
Germany
Tel. +49 5634 99470
Fax. +49 5634 7572
www.peikko.de

Greece
Peikko Greece
Agamemnonos 13 Holargos
15561 Athens Greece
Tel. +30 20 6564644
Fax. +30 20 6564644
www.peikko.gr

Group
Peikko Group Corp.
P.O.Box 104 Voimakatu 3
15101 Lahti Finland
Tel. +358 20 707 511
Fax. +358 3 733 1138
www.peikko.com

Hungary
Peikko Magyarország Kft.
Apáczai Csere János u. 11.
1051 Budapest Hungary
Tel. +36 1 269 5463
www.peikko.hu

India
Peikko India Pvt Ltd

Tel. +91 20 6400 0358
www.peikko.in

Indonesia
Peikko APAC (id)

Tel. +86 (0) 512 5830 9909
www.peikko.co.id

Italy
Peikko Italia S.r.l
Via Ugolini 30 20125 Milano
Italy
Tel. +39 02 643 1394
Fax. +39 02 6410 9388
www.peikko.it

Latvia
SIA Peikko Latvija
Ganību dambis 24A 1005 Riga
Latvia
Tel. +371 66051836
www.peikko.lv

Lithuania
UAB "PEIKKO Lietuva"
R. Kalantos g. 49 Kaunas 52303
Lithuania
Tel. +370 37 350 261
Fax. +370 37 351 063
www.peikko.lt

Macedonia
Peikko Slovakia s.r.o.
92591 Kráľová nad Váhom 660
Slovakia
Tel. +385 (0) 99 647 2007
www.peikko.mk

Netherlands
Peikko Benelux B.V.
Leemansweg 51 6827 BX
Arnhem Netherlands
Tel. +31 26 3843866
Fax. +31 26 3639277
www.peikko.nl

Norway
Peikko Norge As
Kobbervikdalen 119 3036
Drammen Norway
Tel. +47 32 208 880
Fax. +47 32 208 881
www.peikko.no

Philippines
Peikko APAC (ph)

Tel. +86 (0) 512 5830 9909
www.peikko.ph

Poland
Peikko Polska Sp. z o.o.
C.K. Norwida 2 80-280 Gdańsk
Poland
Tel. +48 58 5514018
Fax. +48 58 5514030
www.peikko.pl

Romania
Peikko Slovakia s.r.o.
92591 Kráľová nad Váhom 660
Slovakia
Tel. +40 726 223 334
www.peikko.ro

Russia
000 Peikko
Kolomyazhskiy prospekt 10
litera F. 197348 St. Peterburg
Russia
Tel. +7 812 329 0704
Fax. +7 812 329 0704
www.peikko.ru

Saudi Arabia
Al Rashed Peikko LLC
3447 – Industrial city 2 Unit
No: 1 AD DAMMAM 34326 –
8108 Kingdom of Saudi Arabia
www.peikko.ae

Serbia
Peikko Slovakia s.r.o.
92591 Kráľová nad Váhom 660
Slovakia
Tel. +381 (0) 63 58 9955
www.peikko.rs

Singapore
PEIKKO Singapore Pte. Ltd.
31 Woodlands Close #04-20
Room B Woodlands Horizon
Singapore 737855
www.peikko.sg

Slovakia
Peikko Slovakia s.r.o.
Králová nad Váhom 660 925 91
Kráľová nad Váhom Slovakia
Tel. +421 31 3212 151
www.peikko.sk

Slovenia
Peikko Slovakia s.r.o.
92591 Kráľová nad Váhom 660
Slovakia
Tel. +381 (0) 63 58 9955
www.peikko.si

South Africa
Peikko South Africa

www.peikko.co.za

Spain
Peikko Spain SL
Apdo 67 Calle del Oro 32 28770
Colmenar Viejo Madrid Spain
Tel. +34 91 846 7473
Fax. +34 91 845 3050
www.peikko.es

Sweden
Peikko Sverige AB
P.O.Box 4 Koppargatan 11
60102 Norrköping Sweden
Tel. +46 11 280 460
Fax. +46 11 135 940
www.peikko.se

Switzerland
Peikko Schweiz AG
Route du Petit-Moncor 1b
CH-1752 Villars-sur-Glâne
Switzerland
Tel. +41 26 401 02 02
Fax. +41 26 401 02 10
www.peikko.ch

Taiwan
Peikko APAC (tw)

Tel. +86 (0) 512 5830 9909
www.peikko.tw

Thailand
Peikko APAC (th)

Tel. +86 (0) 512 5830 9909
www.peikko.co.th

Turkey
Peikko Ltd. Sti.
İnönü Caddesi 3-7 Erenkoy
34738 Istanbul Turkey
Tel. + 90 216 360 7139
Fax. + 90 216 369 1126
www.peikko.com.tr

UAE
Peikko Gulf LLC
P.O.Box: 86031 Warehouse WIZ
04-2 Al Hamra Industrial Area
Ras Al Khaimah United Arab
Emirates
Tel. +971 7 2433 627
Fax. +971 7 2433 628
www.peikko.ae

UK
Peikko UK Ltd.
Beaumont Way Newton Aycliffe
DL5 6SN UK
Tel. +44 1325 318 619
Fax. +44 1325 318 481
www.peikko.co.uk

USA
Peikko USA Inc.
525 East Mifflin St. Lebanon PA
17046 USA
Tel. +1 888 734 5561
+1 888 PEIKKO1
Fax. +1 888 220 3853
www.peikkousa.com

PEIKKO GROUP CORPORATION

Peikko Group, founded in 1965, is a family owned company specializing in composite beams and fastening products for concrete connections. Peikko provides innovative solutions to help customers make their building process faster, easier and more reliable. Precasters, builders, constructors, developers, flooring specialists, machine manufactures, power plant designers, architects and structural designers can all enjoy and take advantage of the Peikko solutions.

The Group has offices in 30 countries in Europe, North America, and Middle East. The modern production facilities are located in Canada, China, Finland, Germany, Lithuania, Russia, Slovakia, United Arab Emirates, and United Kingdom. Peikko Group, with headquarters in Lahti, Finland, employs more than 1000 persons.

Peikko Group Corporation
P.O. Box 104
Voimakatu 3, FI-15101 Lahti, Finland
Tel. +358 20 707 511
Fax. +358 3 733 1138
www.peikko.com