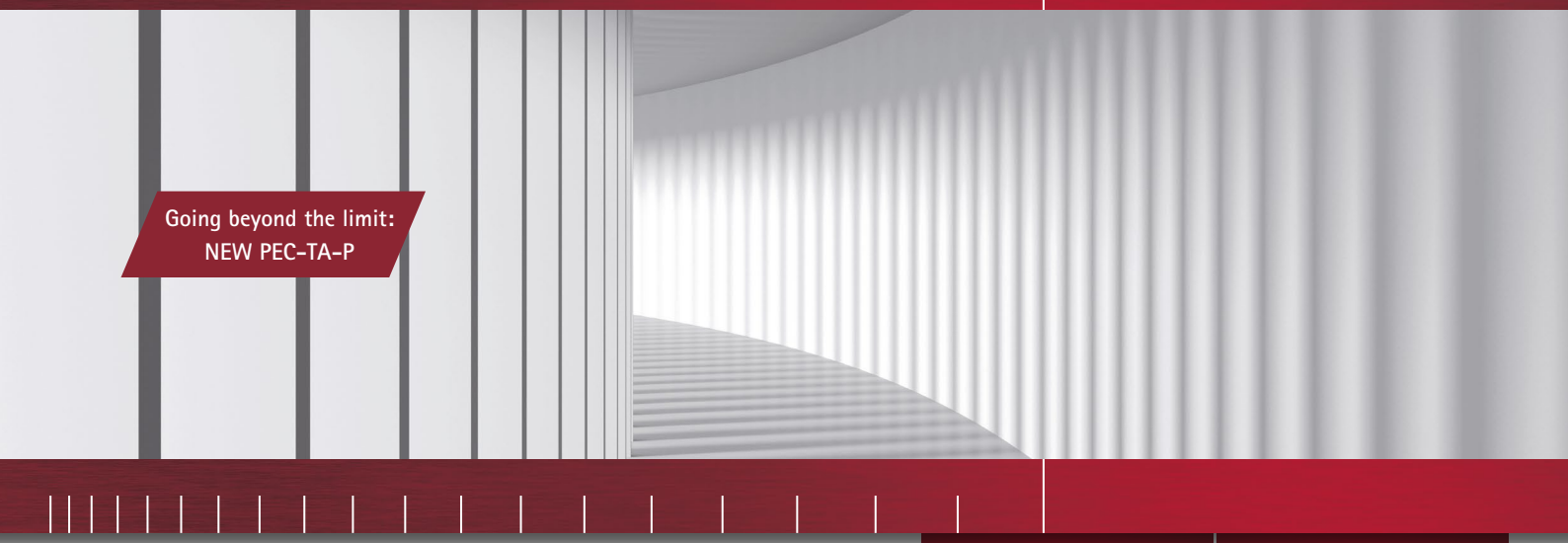
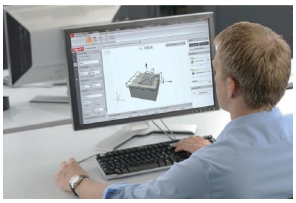
FIXING TECHNOLOGY



PEC Fixing Solutions

Technical Product Information and Product Range

pec EUROPE
The best of both worlds!


PEC – Your expert for high-end fixing solutions

We develop, produce and distribute technically sophisticated and approved products for the construction industry. The PEC product range includes anchoring, façade and system components as well as an extensive range of accessories. We combine German technical know-how with the advantageous production conditions in China. This benefits the customers of PEC, as we can not only realize high-end fixing solutions with a wide range of ETA approved products at highly competitive costs, but we are also flexible to optimize a product according to your needs with the support of production and engineering.

Since 2016 we belong to the Hilti Group in Liechtenstein. This gives our customers even more reliability and trust. Benefit from: optimized quality control, competent technical advice and training, worldwide sales and service support as well as simple and fast order processing through the expansion of our sales warehouses.

PEC – Quality management

A comprehensive quality management system according to European standards ensures technical high-end products

All testing of PEC cast-in channels and other products is performed in Europe according to European standards. Moreover, continuous in-house testing is conducted and recorded on a regular basis. Third party-monitoring of ongoing production procedures is done as per relevant approval specifications which results in consistently high-quality products.

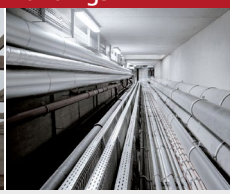
PEC – Application areas

High-end fixing solutions for various application areas in the construction industry.

Office & Apartment Buildings

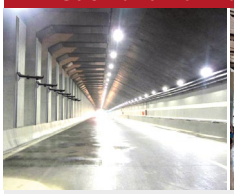
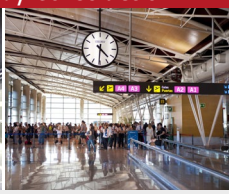

- Façade: curtain wall, concrete facades, brick facades
- Elevators fastening
- Supply lines fastening

Industrial Buildings

- Façade
- Machine and shelf fastening
- Supply lines fastening
- Elevators fastening

Sub- and Railway Construction

- Supply lines fastening in tunnels and stations
- Traffic signs fastening
- Evacuation platform fastening

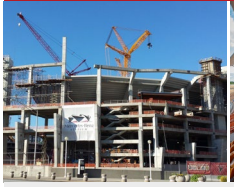
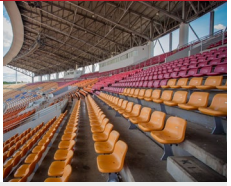
Plant & Power Plant Construction


- Supply lines fastening
- Machine fastening
- Repair plank fastening
- Transfer conveyor belt fastening

Road & Bridge Construction


- Supply lines fastening in bridges
- Traffic signs fastening
- Security fence fastening
- Noise & safety barrier fastening

Other Applications

- Stadium construction (seat fastening, fastening of precast elements & supply lines)
- Cable cars & airports
- Water treatment plants

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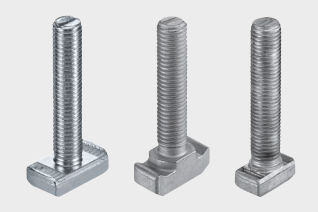
PEC Cast-in Channels and Bolts

PEC cast-in channels are ideally suited for quick, reliable and cost-efficient fixing of different construction elements. The possibility of making simple and flexible adjustments saves time and money.

PEC Europe GmbH offers a vast range of hot-rolled and cold-formed anchor channels for a variety of applications in the construction industry. The importance of professional fixing solutions has been increased enormously over the last years with a growing demand for flexible, time saving, cost-effective and reliable fixing solutions.

PEC-TA-CE cast-in channels, cold-formed

PEC-TA-CE cast-in channels, hot-rolled



PEC-HBC-T-bolts

Innovative fastening solutions according to German standards

The products of PEC Europe GmbH are certified according to European Technical Assessment (ETA). This approval was granted by the German Institute of Building Technology (DIBt) after strict testing and evaluation procedures. External monitoring of ongoing production is carried out by European auditors. This guarantees consistent, reliable product quality.

The selection of the optimal anchor channel for each project depends on the application and the ambient conditions. Depending on the requirements, PEC Europe GmbH recommends hot- or cold-formed anchor channels in galvanized or stainless steel, which are designed for use in cracked and non-cracked concrete. For dynamic forces or loads in 3 directions, our new PEC-TA-P premium channels are particularly suitable.

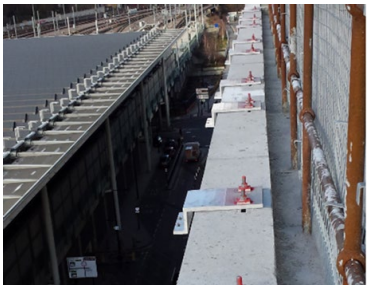
Due to the flexibility in the production and the technical competence we offer not only standard products but also customized solutions.

Deutsches Institut für Bautechnik DIBt

ETA CE

Advantages of using PEC Cast-in Channels

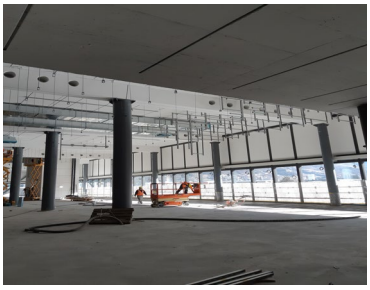
- Easy assembly without complicated tools which minimizes construction time significantly
- Pre-planning reduces construction effort considerably
- Time-saving bolted connections rather than field welding
- No damage to existing reinforcement
- Provides adjustability and flexibility while installation
- Suitable for fire resistance
- Suitable for every kind of environment due to hot-dip galvanization and stainless-steel material
- Special foam filler protects Channel from concrete intrusion
- Pull-out strip allows easy, quick and complete removal of the foam



PEC cast-in channels provide adjustability and flexibility for curtain wall applications

PEC cast-in channels are perfect for fixing car and guide rail brackets in lift / elevators

PEC cast-in channels are ideal for fixing supply lines or cables in bridges



Individual fastening solutions for a varietey of applications.

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Our strengths: Personal customer service & technical support

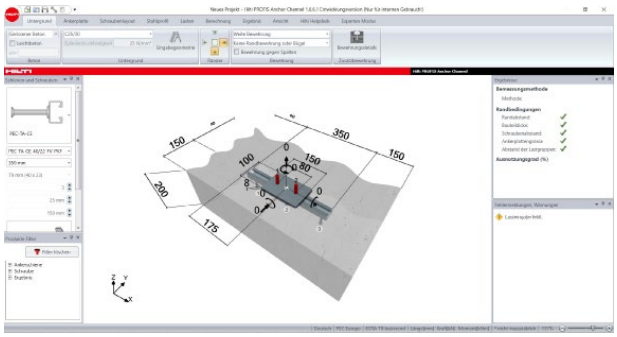
In our sales office in Duisburg we are committed to fast and personal order processing. Our experienced internal sales team reacts quickly and flexibly to your inquiries. Our technical team provides uncomplicated support for your project planning in order to find the best solution together with you.

Benefits

- Competent technical advice. Cost-optimized and future-proof dimensioning according to the new ETA-16/0929
- Uncomplicated and personal order processing
- Fast delivery service from our distribution warehouse in Duisburg
- Attractive pricing
- Optional product training

Free Design-Software

PROFIS Anchor Channel is a reliable planning tool to optimize the design of your anchor channels for the respective construction project. A user-friendly interface allows quick and easy selection of suitable anchor channels and bolts for any type of application. The calculations are based on the current design code EOTA-TR047/EN 1992-4 and the European Technical Assessment ETA-16/0929.



www.pec-europe.com/en/downloads/software.html

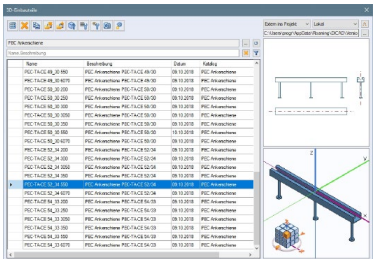
Benefits

- Fast and efficient planning of fixings with anchor channels
- Clear and concise calculation reports
- Wide range of design parameters
- Functions for automatic planning optimization

BIM/DICAD Library

Integral and digital planning with BIM is the best foundation for successful construction. A uniform and coordinated planning of all trades in a common digital model right from the start holds considerable efficiency potential for a continuous, undisturbed construction process. We support you for simple integration with object libraries. On our website under: **www.pec-europe.com/en/downloads/bim.html** you will find data for many products, which we make available to you directly in BIM exchange format (.ifc).

In addition, you will find our products in the DICAD Strakon Software 2019. If you are interested, please check the DICAD website or contact our technical team at technik@pec-europe.com.



DICAD/Strakon

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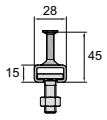
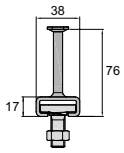
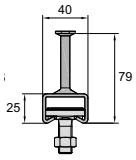
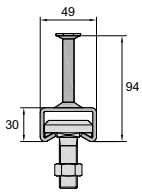
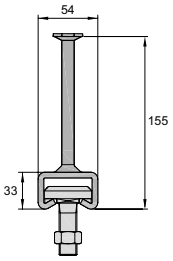
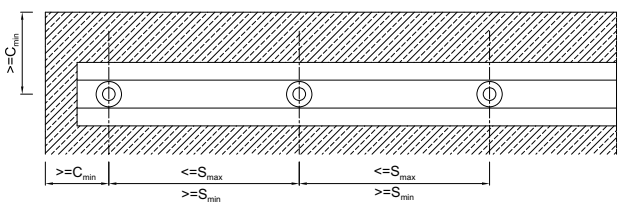
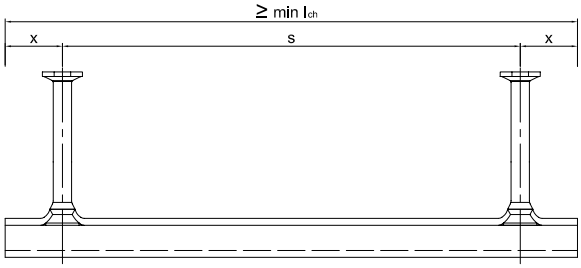
PEC-TA-CE cold-formed cast-in channels with ETA-16/0929						
Profile		PEC-TA-CE 28/15 cold-formed	PEC-TA-CE 38/17 cold-formed	PEC-TA-CE 40/25 cold-formed	PEC-TA-CE 49/30 cold-formed	PEC-TA-CE 54/33 cold-formed
Anchor		Round anchor				
						
Material	Hot-dip galvanized	●	●	●	●	●
	Stainless steel A4	●	●	●	●	●
T-Bolts [1]		28/15	38/17	40/22	50/30	50/30
Thread		M 10 - M 12	M 10 - M 16	M 12 - M 16	M 12 - M 20	M 12 - M 20
Resistance values						
The resistance values of anchor channels can be found in the technical data sheets for cold-formed anchor channels from PEC Europe GmbH at website www.pec-europe.com. For the channel design we recommend our design software "PROFIS Anchor Channels".						
Geometry						
Effective anchorage depth min.						
	$h_{ef,min}$ [mm]	45	76	79	94	155
Min. component thickness						
	h_{min} [mm]	70	100	100	120	180
Min. profile length						
	l_{min} [mm]	100	150	150	150	150
Min. edge distance						
	c_{min} [mm]	40	50	50	75	100
Min. anchor spacing						
	s_{min} [mm]	50	100	100	100	100
Max. anchor spacing						
	s_{max} [mm]	200	200	250	250	250
Overhang [2]						
	x [mm]	25	25	25	25	25

[1] Detailed technical data for our T-bolts can be found in our technical data sheets on our website

[2] The anchor end spacing can be increased from 25 mm to 35 mm





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Cold-formed Cast-in Channels

Technical Advantages

PEC cold-formed cast-in channels are the preferred solution when it comes to most economical product costs. They are suitable for 2D static loads i.e. tension or perpendicular shear:

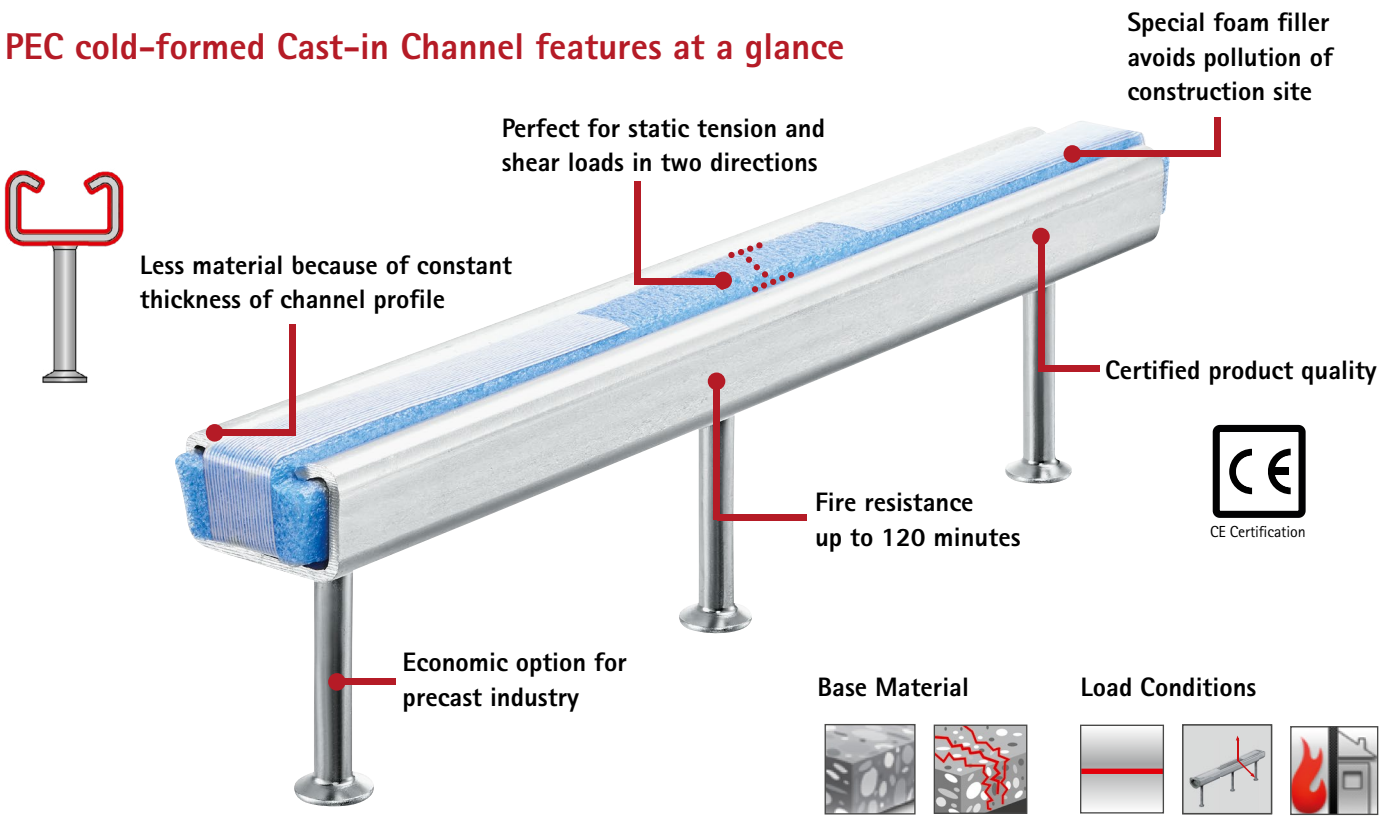
- Cold formed profiles with constant thickness of material
- Good surface finish
- Economic and environment-friendly production due to less material
- Easy and flexible installation on the construction site saves time and money

Typical Applications

We recommend the use of cold-formed cast-in channels for the following applications:

- Building appliances (e.g. ventilation, heating)
- Stadium seating
- Precast components
- Ceiling suspension

PEC cold-formed Cast-in Channel features at a glance

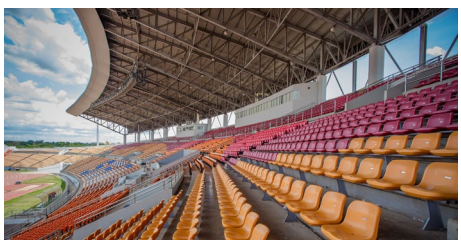


Base Material

Load Conditions

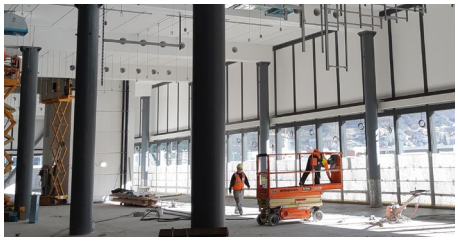
Applications

Fixing precast elements



Fastening of stadium seating

Fastening of Building appliances



Ceiling suspension

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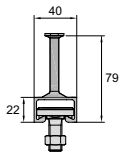
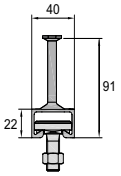
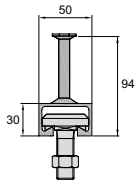
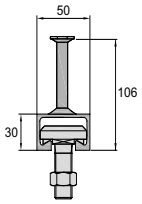
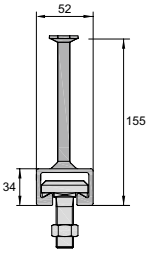
PEC-TA-CE hot-rolled cast-in channels with ETA-16/0929						
Profile		PEC-TA-CE 40/22 hot-rolled	PEC-TA-CE 40/22-P hot-rolled	PEC-TA-CE 50/30 hot-rolled	PEC-TA-CE 50/30-P hot-rolled	PEC-TA-CE 52/34 hot-rolled
Anchor		Round anchor [1]				
			NEW 		NEW 	
Material	Hot-dip galvanized	●	●	●	●	●
	Stainless steel A4	●	●	●	●	●
T-Bolts [2]		40/22	40/22-N	50/30		50/30-N
Thread		M 12 - M 16	M 16	M 12 - M 20		M 16 - M 20
Resistance values						
The resistance values of anchor channels can be found in the technical data sheets for hot-rolled anchor channels from PEC Europe GmbH at website www.pec-europe.com For the channel design we recommend our design software "PROFIS Anchor Channels"						
Geometry						
Effective anchorage depth min.						
	$h_{ef,min}$ [mm]	79	91	94	106	155
Min. component thickness						
	h_{min} [mm]	100	100	105	120	165
Min. profile length						
	l_{min} [mm]	150	100	150	100	170 [3]
Min. edge distance						
	c_{min} [mm]	50	50	75	75	75
Min. anchor spacing						
	s_{min} [mm]	100	50 [4]	100	50 [4]	100
Max. anchor spacing						
	s_{max} [mm]	250	250	250	250	250
Overhang						
	x [mm]	25 [5]	25 [5]	25 [5]	25 [5]	35 [6]

[1] I-Anchor on request

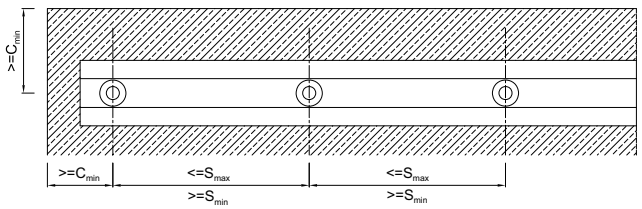
[2] Detailed technical data for PEC-HBC T-bolts can be found in our technical data sheets on our website

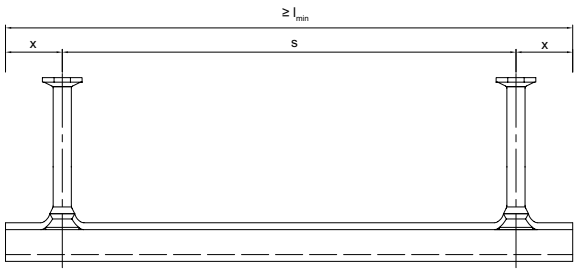
[3] l_{min} = 150 mm for welded I-Anchor

[4] 100 mm in combination with notched bolts

[5] The anchor end spacing can be increased from 25 mm to 35 mm

[6] x=25 mm for welded I-Anchor





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Hot-rolled Cast-in Channels

Technical Advantages

PEC hot-rolled anchor channels are approved according to the latest ETA-16/0929. They offer high load resistance and are the best choice when higher load capacities and fatigue resistance are required.

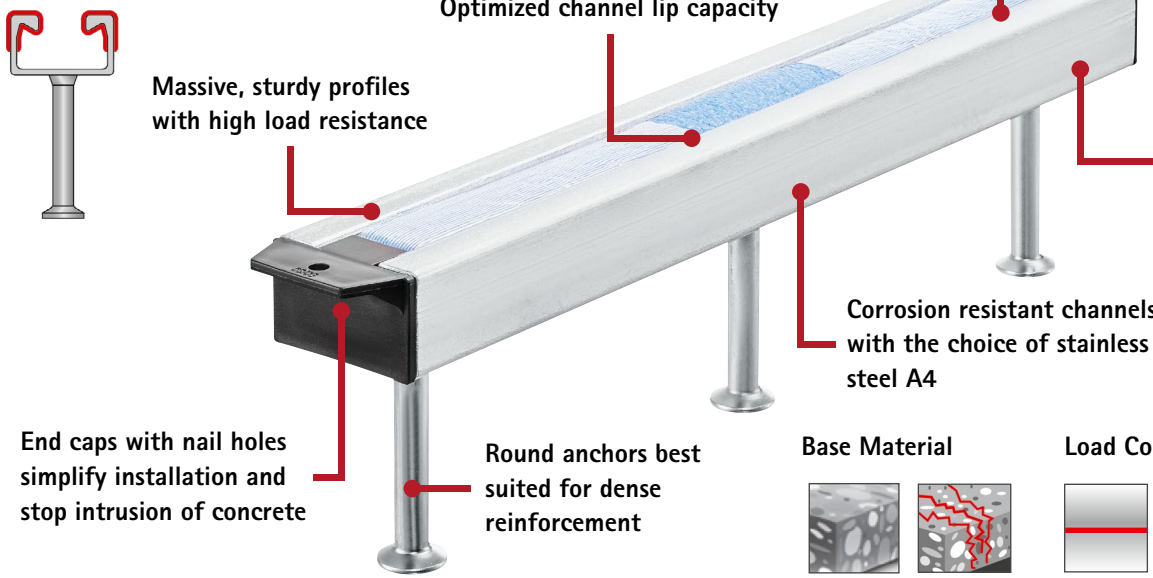
- Massive, sturdy profiles with high load resistance
- Strengthened channel lips suitable for any load direction and high installation torques
- Hot-rolling reduces residual stresses to a minimum
- Foam filler with pull-out strip avoids pollution of construction site
- PEC-TA 52/34 offers supplementary load capacity in 3 load directions as well as fatigue resistance

Typical Applications

We recommend the use of hot-rolled cast-in channels for the following applications:

- Fastening of production equipment (e.g. machines, conveyor belts)
- Metro, railway or utility tunnels (e.g. fixing of cantilever systems, supply pipes, sign boards, ventilation or support beams)
- Bridges (superstructures)

PEC hot-rolled Cast-in Channel features at a glance



CE Certification

Base Material

Concrete (non-cracked) | Concrete (cracked)

Load Conditions

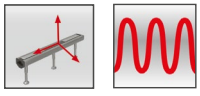
Static/ quasi-static | Static/ 2D loading | Fire resistance

Applications

Metro, railway or utility tunnels

Bridges (superstructures)

Supplementary load conditions for PEC-TA 52/34



Static/ 3D loading | Fatigue

Fastening of production equipment

Curtain Wall

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Ultimate performance with optimized profile geometry: PEC-TA-P

Technical Advantages

PEC-TA 40/22-P and PEC-TA 50/30-P channels redefine performance. With a significantly higher steel resistance of the channel lips, an optimized dimensioning and an improved anchor / channel connection, they achieve top performance.

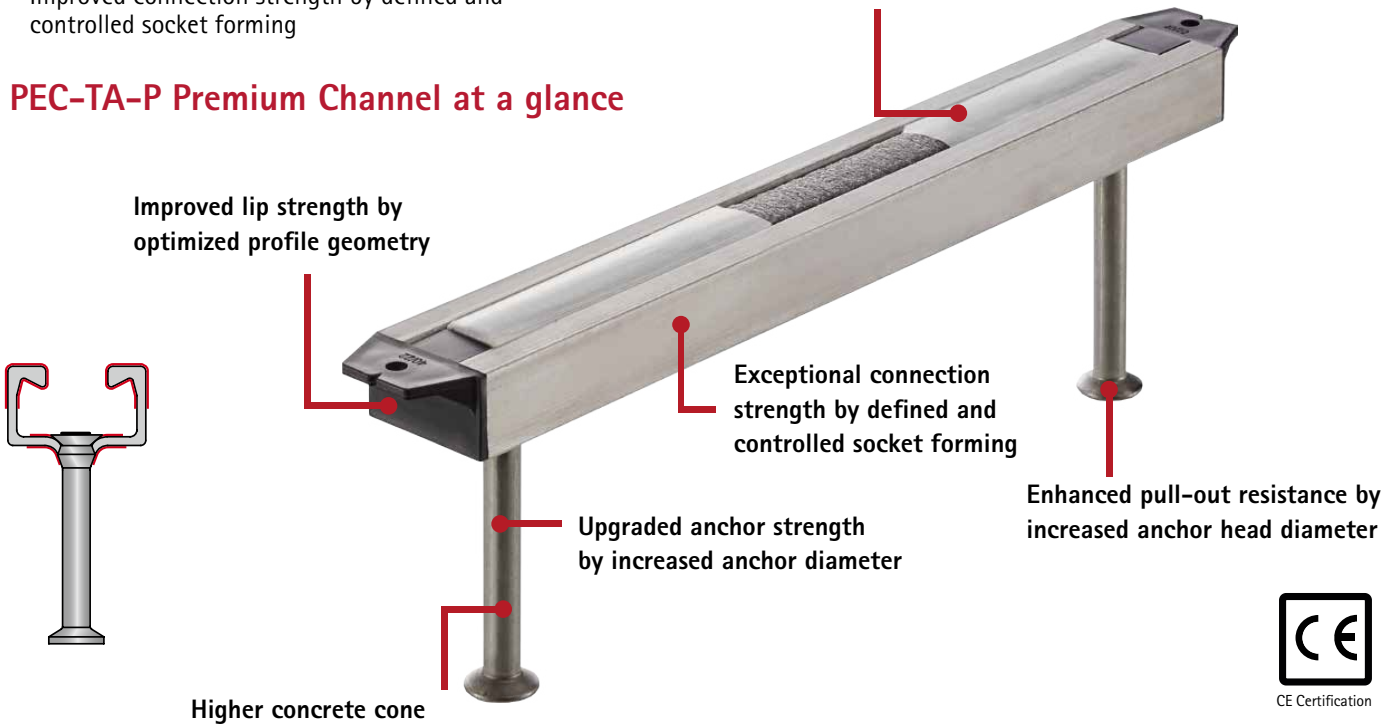
- Up to 98% higher steel connection capacity under tension load
- Up to 148 % higher steel connection capacity under shear load
- Higher concrete cone capacities by increased effective embedment depth h_{ef}
- Improved connection strength by defined and controlled socket forming

Typical Applications

We recommend the use of hot-rolled cast-in channels for the following applications:

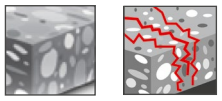
- Best solution for demanding curtain wall applications
- Fastening solutions for bridge construction
- Elevator construction with requirement for dynamic fastening solutions

PEC-TA-P Premium Channel at a glance



CE Certification

Base Material

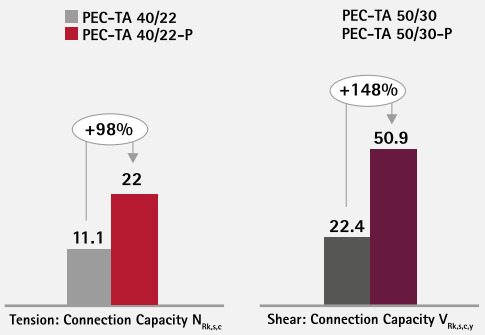


Concrete (non-cracked) | Concrete (cracked)

Load Conditions

Static/ quasi-static | Static/ 2D loading | Static/ 3D loading | Fire resistance | Fatigue

Design steel resistance [kN], examples:



Save up to 40% of material costs!

Due to an improved anchor/channel connection and significantly higher steel resistance, in many applications bigger channels can be replaced by smaller stronger PEC-TA-P channels.

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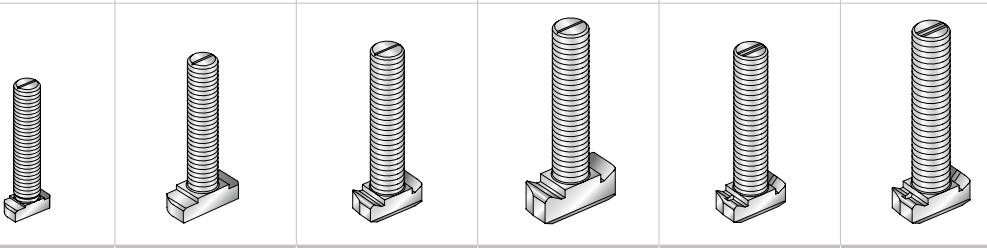
PEC-HBC bolts with ETA-16/0929							
Type		Hammer Head Bolts		Hook Head Bolts		Notched Bolts	
		PEC-HBC-28/15	PEC-HBC-38/17	PEC-HBC-40/22	PEC-HBC-50/30	PEC-HBC-40/22-N	PEC-HBC-50/30-N
All Bolts are delivered with nuts DIN 934.							
Material	HDG	●	●	●	●	●	●
	EP	●	●	●	●		
		● = In stock					
Diameter		M 8 - M 12	M 10 - M 16	M 12 - M 16	M 12 - M 20	M 16	M 16 - M 20
Matching profiles		28/15	38/17	40/22, 40/25	49/30, 50/30, 52/34, 54/33	40/22, 40/22-P	50/30, 50/30-P, 52/34
Length	(mm)	15 - 100	20 - 200	20 - 300	30 - 300	60-80	60-80

Bolt diameter Ø

Resistance values

The resistance values of T-bolts as a system with anchor channels can be found in the technical data sheets from PEC Europe GmbH at www.pec-europe.com.
For the system design we recommend our design software "PROFIS Anchor Channels".

Required Installation torque T_{inst}

HBC-T-Bolt		T_{inst} [1] [Nm]				
		General [2]	Steel-to-steel contact [3]			
		4.6, 8.8, A4-50, A4-70	4.6	8.8	A4-50	A4-70
HBC-28/15	M8	7	-	20	7	15
	M10	10	-	40	-	30
	M12	13	-	60	-	50
HBC-38/17	M10	15	13	15	-	22
	M12	25	-	45	-	50
	M16	40	-	100	-	90
HBC-40/22	M10	15	13	15	-	22
	M12	25	-	45	-	50
	M16	30	-	100	-	90
HBC-40/22-N	M16	160	-	160	-	-
HBC-50/30	M12	25	-	45	-	50
	M16	55	-	100	-	130
	M20	-	-	360	-	250
HBC-50/30-N	M16	185	-	185	-	-
	M20	320	-	320	-	-
HBC-52/34	M20	55	-	360	-	-

[1] T_{inst} must not be exceeded

[2] General: The attachment is in contact with the channel profile and concrete surface

[3] Steel-to-steel contact: The attachment part is braced to the anchor channel by a suitable steel part (e.g. washer). The attachment is only in contact with the channel profile

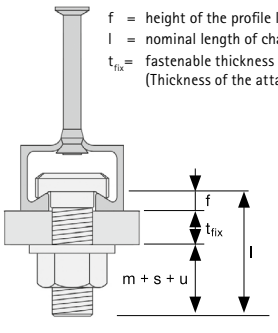
Determining of minimum T-bolt length

Profile	Type	f (mm)
28/15	cold-formed	2,3
38/17	cold-formed	3
40/25	cold-formed	5,6
49/30	cold-formed	7,5
54/33	cold-formed	8
40/22	hot-rolled	6
50/30	hot-rolled	8
52/34	hot-rolled	11,5

Bolt	(h+m+u) (mm)
M 8	11,3
M 10	13,9
M 12	17,3
M 16	21,8
M 20	27,0

m = thickness of the nut (ISO 4032)
s = thickness of the washer
u = channel bolt projection

Note: Round the bolt length to the nearest standard channel bolt length.



f = height of the profile lip
l = nominal length of channel bolt
t_{fix} = fastenable thickness (Thickness of the attached part)

Required T-Bolt length $l = t_{fix} + f + (m+s+u)$

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PEC-TU Cast-in Channels

PEC-TU cast-in channels in concrete elements like columns or beams are an ideal way of fixing, trapezoidal steel sheets, window and door frames as well as other construction elements with the help of self-taping screws. PEC-TU cast-in channels enable a safe, fast and very cost-effective installation. PEC-TU cast-in channels are available in three different channel types i.e. Type-A, Type-B and Type-C with a standard length of 3.000 mm.

The standard delivery includes a hot-dip galvanized version with zinc coating ≥ 50 µm. PEC-TU anchor channels are supplied with integrated polystyrene filler. The filler serves as a separating layer between the profile and the concrete to ensure that the screws do not hit the concrete layer.

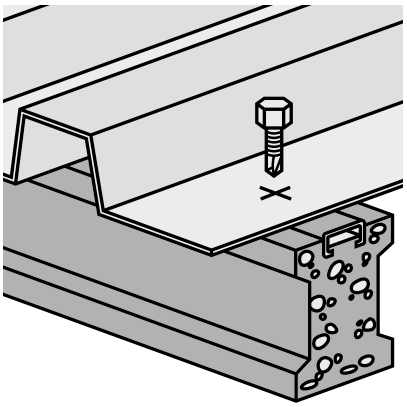
PEC-TU cast-in channels are approved by the building authorities in accordance with Z-21.4-1886.

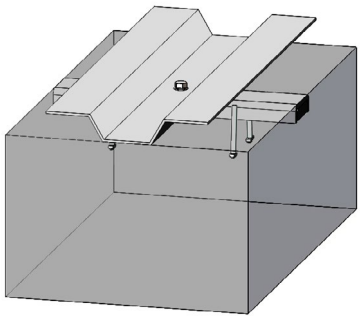
Advantages

- Easy installation in the existing reinforcement
- Load bearing capacity in all three directions
- Technically sound and slip resistant connection
- Polystyrene filler prevents the contact of the borers and screws with the concrete
- Rational steel sheet screwing
- Smoothly assembly without pre-drilling

Typical applications

- Fixing trapezoidal sheets
- Fixing door and window frames
- Fixing roof constructions





Fixing of roof constructions or door and window frames

Examples for the attachment of trapezoidal sheets with PEC-TU

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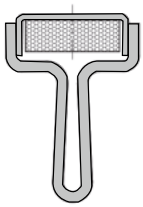
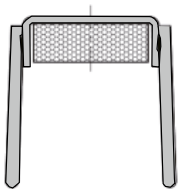
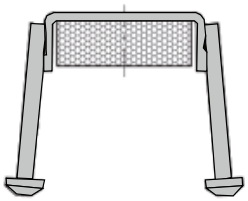
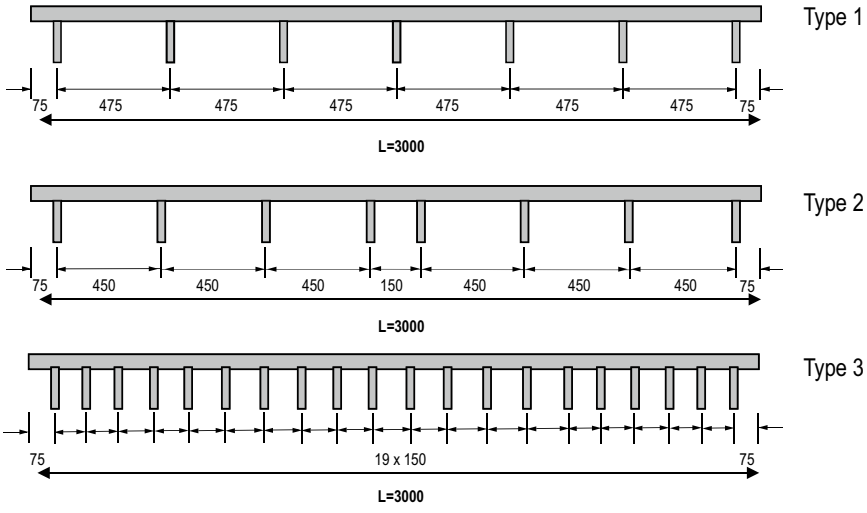
PEC-TU cast-in channels				
Profile Dimensions		PEC-TU 60/22/3 Type A	PEC-TU 60/22/3 Type B	PEC-TU 60/22/3 Type C
Deutsches Institut für Bautechnik DIBt Approval Nr. Z 21.4-1886				
Nominal embedment depth	h_{nom} [mm]	100	75	68
Section modulus	$W_{pl,y}$ [cm³]	0,71		
Moment of inertia	I_y [cm⁴]	1,13		
Material		Steel according to DIN EN 10025: S235JR (1.0038)		Steel DIN EN 10263-2 (1.0214)
Connecting screws		e.g. Hilti self-tapping screws		

For the dimensioning of your project, you will find the technical data in the DIBt approval Z-21.4-1886 at www.pec-europe.com, or you can contact our technical team at technik@pec-europe.com.

Anchor Spacing

PEC-TU cast-in channels are supplied in 3 m stock lengths with the different anchor spacing. When selecting the anchor spacing, please consult the technical requirements from the approval.



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PEC Framing Channels

PEC offers a comprehensive range of framing channels. In various steel qualities (blank, hot-dip galvanised or stainless steel) the hot-rolled and cold-rolled channel portfolio is flexible and versatile. PEC framing channels can be welded directly to the steel components.

They are suitable for low, medium and high loads and for use in a wide range of applications.
Easy and quick installation on site with PEC screws greatly facilitate the work on construction site.

PEC framing channels can be welded directly to the steel components

Product advantages

- Currently the only hot-rolled framing channel with ETA for 3D loading in combination with toothed or serrated screws
- New PEC-MZ-CE 29/20 is the first ETA-tested framing channel with teeth
- Optimized profile geometry for highest tension- or shear loads
- Flexible material selection depending on application: blank, hot-dip galvanized, stainless steel A4
- Simplified installation due to the choice of 3 installation methods (welded, partially welded and subsequently doweled)
- Corrosion protection with hot-dip galvanized or stainless steel A4 material possible

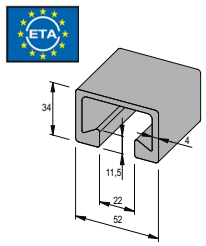
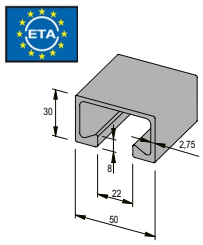
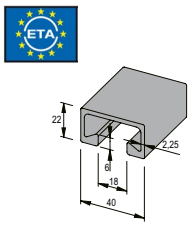
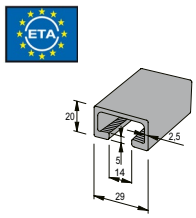
Typical applications

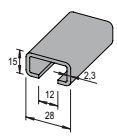
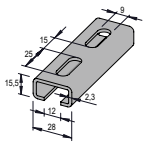
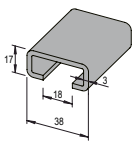
- Fixing air ducts, pipes and electrical lines
- Anchoring of machines and racks
- Infrastructure projects (e.g. tunnels or bridges)
- Shipbuilding
- Automotive
- Elevator construction

PEC-M-CE framing channels

PEC-MZ-CE toothed framing channels

Product overview

PEC framing channels, hot-rolled (suitable for welding, doweling and screwing)			
PEC-M-CE 52/34	PEC-M-CE 50/30	PEC-M-CE 40/22	PEC-MZ-CE 29/20
			
WB, FV, A4	WB, FV, A4	WB, FV, A4	WB, FV

PEC framing channels, cold-formed (suitable for welding, doweling and screwing)		
PEC-M 28/15	PEC-L 28/15 (perforated)	PEC-M 38/17
		
WB, FV, A4	FV	WB, FV, A4

ETA for hot-rolled framing channels

Material and surface finishes:

WB	Steel S235 JR - 1.0038 (St 37-2), blank
FV	Steel S235 JR - 1.0038 (St 37-2), hot-dip galvanized
A4	Stainless steel A4 1.4362 / 1.4401 / 1.4404 / 1.4571

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PEC Cable Holder System

The safe load transfer of heavy wires and cables in tunnels, shafts and other utilities requires a stable fixture and appropriate support brackets. The PEC cable holder system consisting of cable holders and cable retainer cast-in channels ensures a proper storage system for cables and power lines within a short installation time and adjustment possibility.

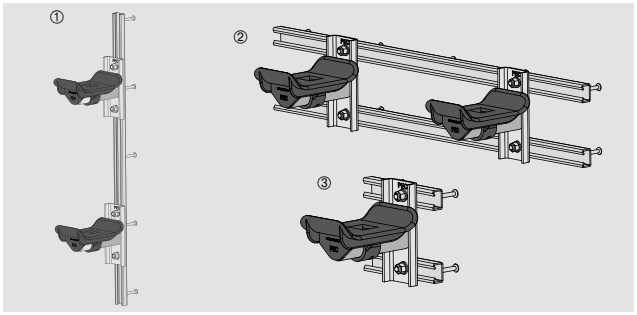
The cable holder channels are available in two versions:

- With anchors for casting into the onsite concrete or in precast elements
- Without anchors for subsequent installation with the help of post-installed anchors

Cable holder channels or cable holder brackets

The cable holders as support brackets for cables are available in three versions:

- For hooking in the cable holder cast-in channels (1)
- For fixing in the PEC cast-in channels with T-bolts (2)
- For fixing with post-installed anchors (3)



Anchor channels and cable holder brackets

Advantages of PEC Cable Holder Channels

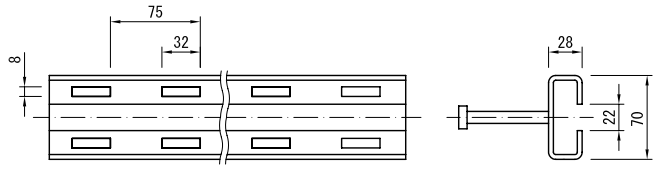
- Easy installation on existing formwork or existing walls
- Clean finish of concrete due to end caps
- The penetration of concrete into the interior of the channel is prevented by a plastic foam filler
- Easy removal of the filler by the integrated rip-liner
- High corrosion protection by galvanizing
- Can be cut onsite arranging the anchors asymmetrically
- Available in different lengths

Advantages of PEC Cable Holder Brackets

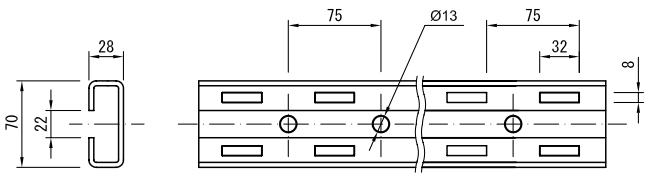
- Easy installation using the cable holder cast-in channels
- Adjustability of the support seat in the grid of 75 mm
- Individual alignment of the cable holder for post-installed anchors during assembly through the existing slotted holes
- Seat can be adjusted with in ± 45 degrees angle

Dimensions

Cast-in cable holder channels with anchors



Cable holder channels without anchors



Order Example

Cast-in cable holder channels

Description	Length (mm)	Nr. of anchors Φ10 x 75
PEC-KHB-70/28-FV-PKF-670	670 mm	7
PEC-KHB-70/28-FV-PKF-820	820 mm	8
PEC-KHB-70/28-FV-PKF-970	970 mm	9
PEC-KHB-70/28-FV-PKF-1120	1.120 mm	10
PEC-KHB-70/28-FV-PKF-1270	1.270 mm	11
PEC-KHB-70/28-FV-PKF-1345	1.345 mm	12
PEC-KHB-70/28-FV-PKF-1645	1.645 mm	14
PEC-KHB-70/28-FV-PKF-1945	1.945 mm	16
PEC-KHB-70/28-FV-PKF-2245	2.245 mm	18
PEC-KHB-70/28-FV-PKF-2545	2.545 mm	20
End Caps		
PEC-KHE-70/28-Plastic		

Cable holder channels with post-installed anchors

Description	Length (mm)
PEC-KHM-70/28-FV-1400	1.400 mm
PEC-KHM-70/28-FV-1700	1.700 mm
PEC-KHM-70/28-FV-2000	2.000 mm
PEC-KHM-70/28-FV-2300	2.300 mm
PEC-KHM-70/28-FV-2600	2.600 mm
Post-installed anchors for cable holder channel type PEC- KHM	
Hilti-HST-M12 acc. to ETA-98/0001 or equivalent, for installing in concrete. Min. concrete grade C20/25. Compound anchor M12 for concrete and masonry $_{hef}$ ≥ 90mm. Minimum 2 anchors per cable holder channel and post-installed anchor distance S_{max} = 225 mm	

Special lengths and material upon request

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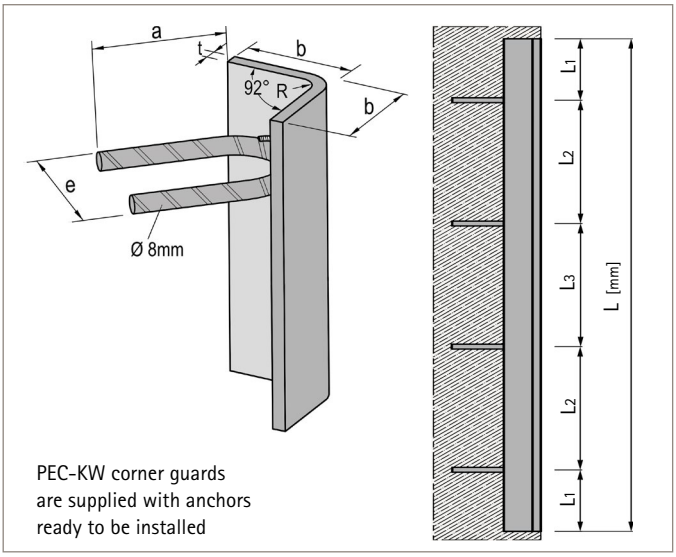
PEC Corner Guards Type KW



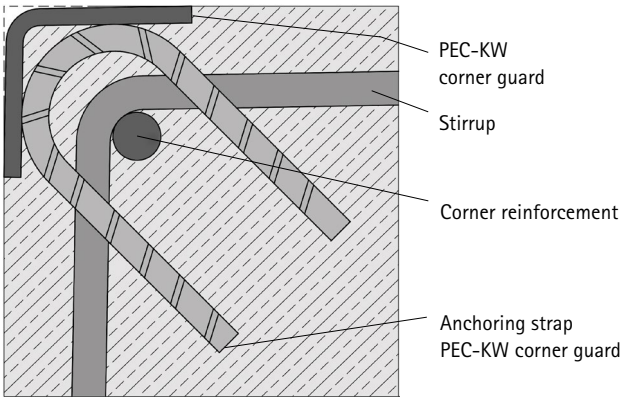
PEC-KW corner guards
are supplied with anchors
ready to be installed

Damaging of concrete columns or gates can cause lasting building damages. The installation of PEC corner guards is ideally suited to protect corners and edges of concrete elements. The PEC corner guards are available in stainless steel or hot-dip galvanized material. Special versions in other dimensions or materials are available upon request.

Advantages of using PEC Corner Guards

- The 92-degree angle prevents concrete seeping between formwork and corner profile, resulting in a smoother finish.
- The U-shaped stirrups simplify the installation in the corner edge reinforcement.
- The bent strong reinforcement anchor ensures optimal anchorage.
- The hot-dip galvanized version guarantees corrosion protection in outdoor areas.

Typical installation within a concrete column



Materials and dimensions

HDG = Angle profile: Hot-dip galvanized steel
Anchor: Reinforcement steel

A2 = Angle profile: Stainless steel A2
Anchor: Stainless reinforcement steel

Order details

Product versions of PEC-KW corner guards

Order example: PEC-KW-80/6-FV-1000				HDG Hot-dip galvanized	A2 Stainless steel*	Anchor spacings			Anchor dimensions	Radius
Type b/t [mm]	Length L [mm]	Material thickness [mm]	Number of anchors			L1 [mm]	L2 [mm]	L3 [mm]	a x e [mm]	R [mm]
PEC-KW 50/5	500	5	2	HDG	A2	150	200		75 x 55	6
	750	5	2	HDG	A2	125	500		75 x 55	6
	1.000	5	2	HDG	A2	250	500		75 x 55	6
	1.500	5	4	HDG	A2	125	500	250	75 x 55	6
	2.000	5	4	HDG	A2	250	500	500	75 x 55	6
PEC-KW 80/6	500	6	2	HDG	A2	150	200		100 x 85	8
	750	6	2	HDG	A2	125	500		100 x 85	8
	1.000	6	2	HDG	A2	250	500		100 x 85	8
	1.500	6	4	HDG	A2	125	500	250	100 x 85	8
	2.000	6	4	HDG	A2	250	500	500	100 x 85	8
PEC-KW 100/8	500	8	2	HDG	A2	150	200		110 x 85	16
	750	8	2	HDG	A2	125	500		110 x 85	16
	1.000	8	2	HDG	A2	250	500		110 x 85	16
	1.500	8	4	HDG	A2	125	500	250	110 x 85	16
	2.000	8	4	HDG	A2	250	500	500	110 x 85	16

* on request

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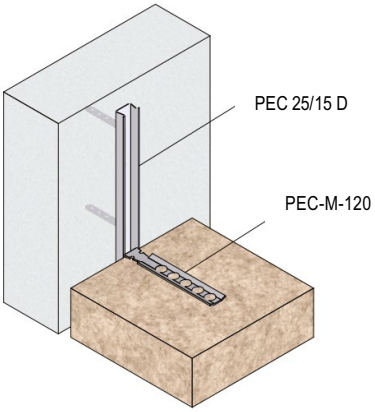
PEC Brick Tie System

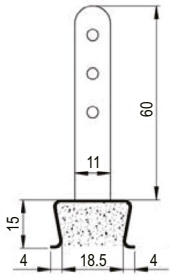
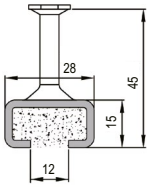
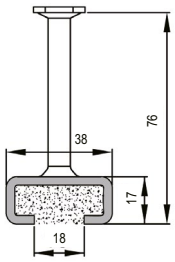
PEC brick tie systems guarantee the safe and long-term bond of masonry with concrete or steel structures.

The brick tie channels are cast into the concrete element. Our tear-resistant plastic rip-line facilitates the removal of the filling material after concreting. The corresponding brick tie anchors are inserted into the cast-in brick tie channel at spacing of 25 cm and are pressed into the masonry joint mortar.

For connections with welded framing channels on steel structures our brick tie anchors fit into the standard profiles of dimensions 28/15 and 38/17.



Composite brickwork support and reinforced concrete construction with PEC brick tie system.

PEC brick tie channels			
	Description	**Finish**	**Matching brick tie anchorr**
	PEC-MS-25/15-D with punched anchor	Sendzimir (sv) Stainless Steel A4	Typ ML Typ PB
	PEC-TA-CE 28/15 PEC-M 28/15 PEC-L 28/15	HDG Stainless Steel A4	Typ ML Typ PB
	PEC-TA-CE 38/17 PEC-M 38/17	HDG Stainless Steel A4	Typ BL

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PEC Brick Tie System

PEC brick tie anchors							
	Description	Finish	Dimensions (mm)				Matching profiles
	PEC-ML	HDG Stainless Steel A4	Typ ML	Length	Width	Size	25/15 28/15
			85	85	25	2	
			120	120	25	2	
			180	180	25	2	
	PEC-BL	HDG Stainless Steel A4	Typ BL	Length	Width	Size	38/17
			85	85	30	2	
			120	120	30	2	
			180	180	30	2	
	PEC-PB Thin-bed mortar anchor	Stainless Steel A2	Typ PB	Length	Width	Size	25/15 28/15
			120	120	30	0,80	
			150	150	30	0,80	
			180	180	30	0,80	

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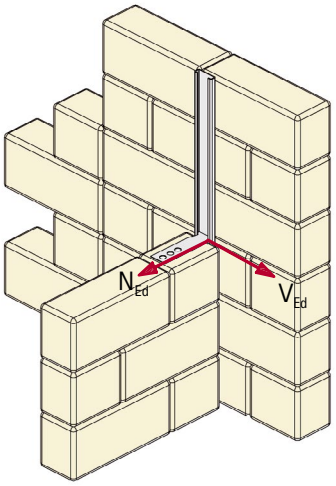
Brick Tie System PEC-TEC

Application

The PEC-TEC connection system is the ideal product to quickly, reliably and securely connect walls without any complicated tools. The system is ideally suited to connect masonry walls one with another or masonry walls with concrete walls. To ensure the secure connection of additionally installed masonry with existing walls, the PEC-TEC wall connection system is the ideal solution.
Regardless of the brick sizes the tie anchors can be inserted into the brick tie channels. The flexibility of the tie anchor remains intact even after installation in the channel and prevents the formation of uncontrolled cracks in the brickwork.

Verification:
$N_{Ed} \leq N_{Rd}$
$V_{Ed} \leq V_{Rd}$



Recommended resistance values [1] of PEC-TEC with anchor distance S = 250 mm			
		Single load [kN]	Distributed load [kN/m]
Tension capacity of anchor in:			
Concrete	$N_{Rec,p,C}$	0,51	2,1
Shear capacity of anchor in			
Concrete	$V_{Rec,C}$ (kN)	1,43	5,71
Tension steel capacity of Brick tie anchor in channel	$N_{Rec,S}$ (kN)	1,52	-
Shear steel capacity of Brick tie anchor in channel	$V_{Rec,S}$ (kN)	0,25	-

[1] Design resistance $N_{Rd} = N_{Rec} \times 1,4$ bzw. $V_{Rd} = V_{Rec} \times 1,4$
Values for masonry on request.

Delivery scope and available material

The brick tie channels and anchors are supplied in a galvanized version. The brick tie channels are supplied in packs of 20 channels with a length of each 1.25 m (25 meters).

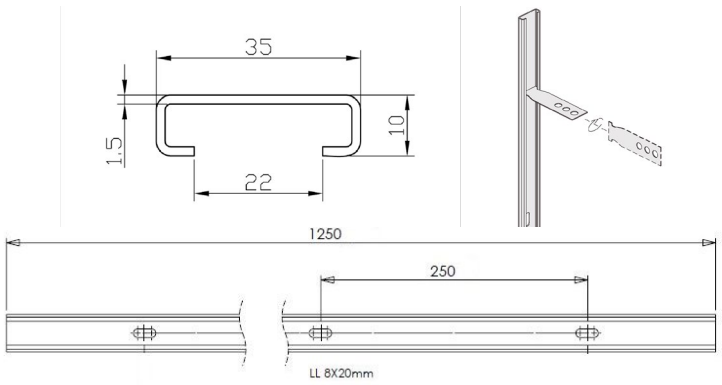
Installation Accessories

The installation accessories packet contains 20 brick tie anchors, 12 plastic dowels, 12 galvanized screws and washers with assembly instructions.

Installation

The installation of the PEC-TEC brick tie system is simple and uncomplicated and can be carried out with simple tools. The brick tie channel is screwed with three dowels onto the wall and the tie anchors are inserted into the channel and placed in the masonry joint mortar.

The gap between the old and the new wall is then filled with insulation or with a permanently elastic joint compound.



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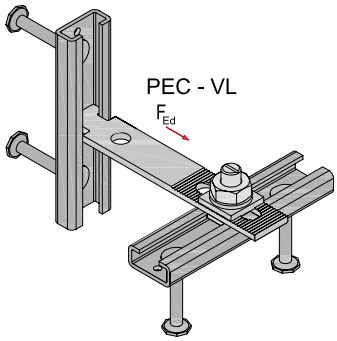
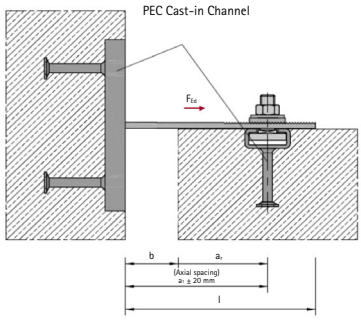
PEC Toothed Straps Type VL





Product description	Delivery scope and material type
PEC toothed straps of type VL with serrated straps and counter-plates as well as welded-on PEC bolt of only tensile forces. Two members on both sides can safely be connected with already vertically and horizontally installed PEC cast-in channels with the Toothed Straps which provide flexibility in all three directions.	**Material:** Toothed straps are available zinc-plated and in stainless steel A4 (1.4401/1.4571) **Delivery:** PEC toothed straps with counter-plates PEC Bolts for cast-in channels with nut and washers must be ordered separately **Special Versions** Special design requirements and material upon request

PEC toothed straps Type VL

Features				Dimensions			Fastening with PEC cast-in channels and PEC T-bolts
Zinc plated		Stainless Steel A4 1.4571 / 1.4401		Length	Tolerance	Slotted-holes	
Type	a_1 mm	Type	a_1 mm	mm	mm	mm	
PEC - VL 28/15 gvz - 050	50	PEC - VL 28/15 A4 - 050	50	90	a_1 ± 20	LL 11 x 55	PEC-TA-CE 28/15 Short pieces 150 - 250 mm PEC-HBC-28/15 M 10x30 Tightening Torque T_{inst}=13 Nm
PEC - VL 28/15 gvz - 075	75	PEC - VL 28/15 A4 - 075	75	115			
PEC - VL 28/15 gvz - 100	100	PEC - VL 28/15 A4 - 100	100	140		LL 11 x 55 RL 11	
PEC - VL 28/15 gvz - 125	125	PEC - VL 28/15 A4 - 125	125	165			
PEC - VL 28/15 gvz - 150	150	PEC - VL 28/15 A4 - 150	150	190			
PEC - VL 28/15 gvz - 175	175	PEC - VL 28/15 A4 - 175	175	215			
PEC - VL 28/15 gvz - 200	200	PEC - VL 28/15 A4 - 200	200	240			
PEC - VL 28/15 gvz - 225	225	PEC - VL 28/15 A4 - 225	225	265			
PEC - VL 28/15 gvz - 250	250	PEC - VL 28/15 A4 - 250	250	290			
PEC - VL 38/17 gvz - 075	75	PEC - VL 38/17 A4 - 075	75	115	a_1 ± 20	LL 13x55 RL 13	PEC-TA-CE 38/17 Short pieces 150 - 250 mm PEC-HBC-38/17 M 12x50 Tightening Torque T_{inst}=25 Nm
PEC - VL 38/17 gvz - 100	100	PEC - VL 38/17 A4 - 100	100	140			
PEC - VL 38/17 gvz - 125	125	PEC - VL 38/17 A4 - 125	125	165			
PEC - VL 38/17 gvz - 150	150	PEC - VL 38/17 A4 - 150	150	190			
PEC - VL 38/17 gvz - 175	175	PEC - VL 38/17 A4 - 175	175	215			
PEC - VL 38/17 gvz - 200	200	PEC - VL 38/17 A4 - 200	200	240			
PEC - VL 38/17 gvz - 225	225	PEC - VL 38/17 A4 - 225	225	265			
PEC - VL 38/17 gvz - 250	250	PEC - VL 38/17 A4 - 250	250	290			
PEC - VL 38/17 gvz - 275	275	PEC - VL 38/17 A4 - 275	275	315			
PEC - VL 38/17 gvz - 300	300	PEC - VL 38/17 A4 - 300	300	340			

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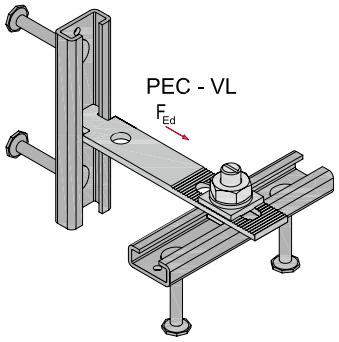
PEC Toothed Straps Type VL: Design



Resistance values PEC-VL			
Type	Characteristic resistance F_{Rk} [kN]	Design resistance F_{Rd} [kN]	Recommended resistance F_{Rec} [kN]
Material	Steel zincplated gvz		
PEC-VL 28/15	8,8	4,9	3,5
PEC-VL 38/17	14,0	7,8	5,6
Material	Stainless Steel		
PEC-VL 28/15	11,7	6,6	4,6
PC-VL 38/17	19,9	11,0	7,9

F_{Rd} with a recommended partial safety factor on the resistance side of 1.8
(according to EN1992-4 for channel lip failure, in case that no national regulation is available)
F_{Rec} with a recommended partial safety factor on the resistance side of 1.4

Anchor channel design must be done separately using "PROFIS Anchor Channel" software based on given component geometry and applied loads

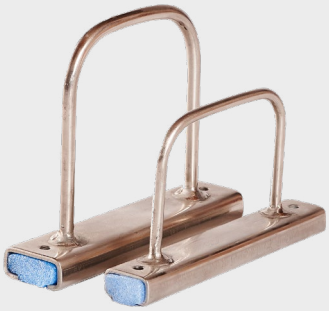
Proof: $F_{Ed} \leq F_{Rd}$

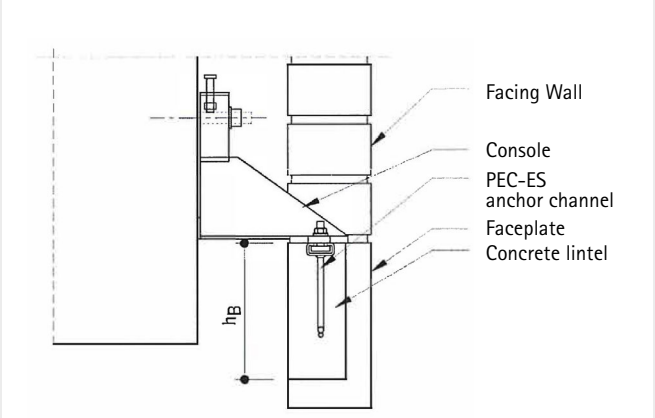
PEC-ES anchor channels for precast concrete lintels

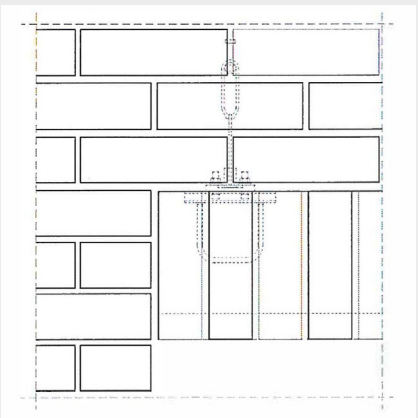
Together with a console, the PEC-ES anchor channel is ideally suited to attaching precast concrete lintels in the brickwork support system.

PEC-ES anchor channels are manufactured in the profile dimensions 28/15 and 38/17. Profile and welded stirrups as anchor are made of stainless steel. The profile is protected from the penetration of concrete by a profiled polystyrene foam together with a pull-out strip which allows quick, easy and complete removal of the foam. PEC-TA-ES are offered in delivery lengths of 150 mm.

You can find detailed technical data in the "General building approval Z-21.4-2046" on our website.







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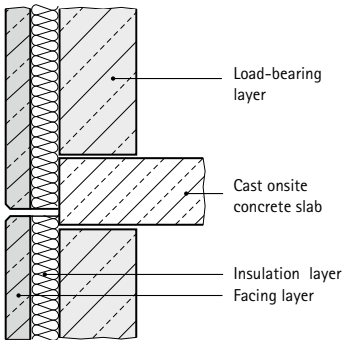
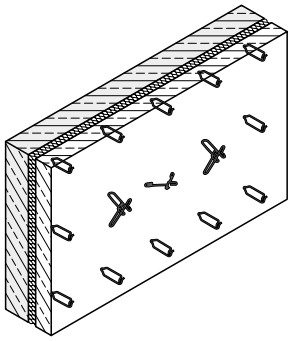
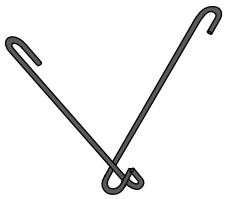
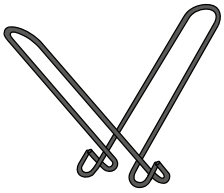
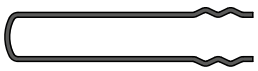
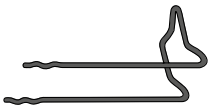
PEC Sandwich Panel Anchors for fixing concrete elements

Sandwich panels are large multilayer, reinforced concrete façade elements. They consist of a facing layer, an insulation and a load-bearing layer. The main function of the PEC sandwich anchor system is to connect the load-bearing and facing layers of sandwich panels and to transfer the forces acting on the facing layer to the load-bearing layer. In addition, restricting the expansion and contraction of the facing layer is avoided.

Typical structure of 3-layer panel	Typical application of SPAs
	

PEC-SPA Product range

SPA-1	SPA-2	Connector pin SPA-N	Stirrup SPA-B	Clip-on pin SPA-A
				

Advantages of PEC Sandwich Panel Anchors

- Quick and easy installation of anchors and pins
- Reduction of mounting and planning effort
- Safety through building authority approvals
- EnEV-compatible with minimal thermal bridges through the fastening system
- Sustainability through stainless steel (materials A4 and D4 acc. to approval Z-21.8-2053, A2 on demand)
- Allows production of sandwich panels in positive and negative procedure
- Insulation layer thickness up to 400 mm possible

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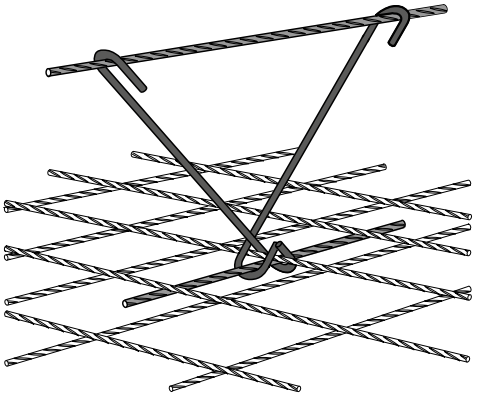
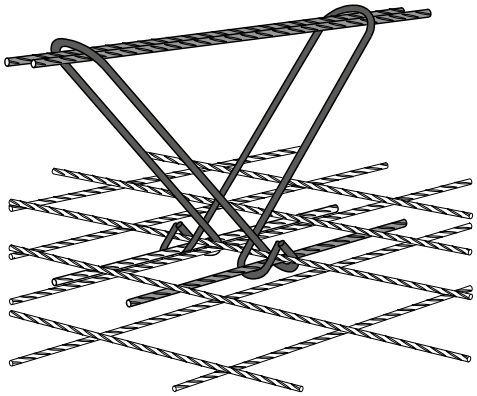
PEC Supporting and horizontal anchors: PEC-SPA-1 / PEC-SPA-2

Product description

PEC-SPA-1	PEC-SPA-2
	

General information

The sandwich panel anchors PEC-SPA-1 and PEC-SPA-2 are V-shaped anchors of round steel bars. The bent ends secure the reinforcement bar and the anchorage in the concrete. An easy distinction is ensured due to different colour marking.

PEC supporting anchors are mainly used for carrying the resulting vertical loads from the dead load of the facing layer. Planned or unplanned eccentric loads and horizontal loads due to e.g. wind and temperature deformation should also be considered.

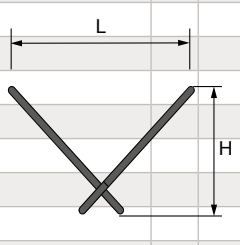
The PEC-SPA system SPA-1 can also be used as a horizontal anchor (if necessary - the PEC-SPA-2 is as well suitable as a horizontal anchor). Primarily the horizontal anchor functions as a carrier of the horizontally acting forces (e.g. impact forces during lifting, wind forces on soffits or from panels hanging askew on the crane).

To allow loads when panels are rotated for transport these anchors have to be dimensioned carefully.

Overview of available anchor heights H and lengths L (mm)

Sandwich panel anchors SPA-1 / SPA-2

Steel bars Ø (mm) 5,0			Steel bars Ø (mm) 6,5			Steel bars Ø (mm) 8,0			Steel bars Ø (mm) 8,5			Steel bars Ø (mm) 10		
Order no. SPA-1: 401-01- SPA-2: 401-02-	H	L	Order no. SPA-1: 401-01- SPA-2: 401-02-	H	L	Order no. SPA-1: 401-01- SPA-2: 401-02-	H	L	Order no. SPA-1: 401-01- SPA-2: 401-02-	H	L	Order no. SPA-1: 401-01- SPA-2: 401-02-	H	L
04-05-140	140	225												
04-05-160	160	265	04-07-160	160	260									
04-05-180	180	305	04-07-180	180	300									
04-05-200	200	345	04-07-200	200	340									
04-05-220	220	385	04-07-220	220	380	04-08-220	220	380	04-09-220	220	375			
04-05-240	240	425	04-07-240	240	420	04-08-240	240	420	04-09-240	240	415			
04-05-260	260	465	04-07-260	260	460	04-08-260	260	460	04-09-260	260	455			
			04-07-280	280	500	04-08-280	280	500	04-09-280	280	495			
			04-07-300	300	540	04-08-300	300	540	04-09-300	300	535			
			04-07-320	320	580	04-08-320	320	580	04-09-320	320	575			
						04-08-340	340	620	04-09-340	340	615	04-10-340	340	610
						04-08-360	360	660	04-09-360	360	655	04-10-360	360	650
									04-09-380	380	695	04-10-380	380	690
									04-09-400	400	735	04-10-400	400	730
									04-09-420	420	775	04-10-420	420	770
												04-10-440	440	810
												04-10-460	460	850
												04-10-480	480	890
												04-10-500	500	930
												04-10-520	520	970



Note: Additional dimensions are available on request

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PEC Restraint Ties: PEC-SPA-N/B/A

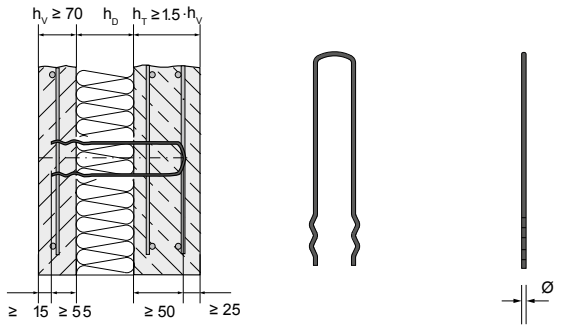
Product description

The PEC Restraint Ties are used when forces act perpendicularly to the panel surface as a result of wind, temperature deformation or adhesion to formwork. See below the available product range.

PEC Restraint Ties	
Diameter See measures next to the products **Material** Stainless steel according to approval Z-21.8-2053 - A4: 1.4571 / 1.4401 / 1.4404 - D4: 1.4362 (Lean duplex steel) Other steel types A2 on demand	**Concrete quality** Facing layer ≥ C 30/37 Load-bearing layer ≥ C 30/37 **Reinforcement** Reinforcement mesh B500A, B500B Ribbed reinforcing bars B500A, B500B **The facing layer's minimum reinforcement** Square reinforcement mesh 1,88 cm²/m

Product range of PEC Restraint Ties

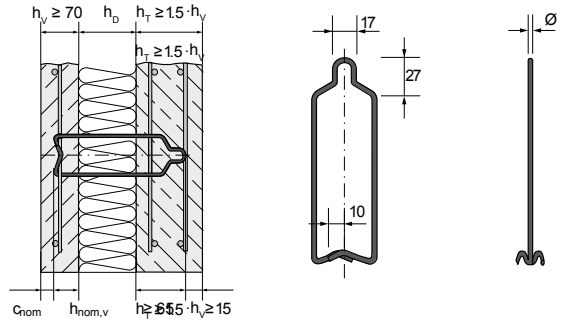
PEC Connector Pins SPA-N



Diameter
3.0 mm / 4.0 mm / 5.0 mm / 6,5 mm

PEC Connector Pins SPA-N are U-shaped bent wires. Not only the round end of the anchor, but also the corrugated ends are anchored in the concrete.

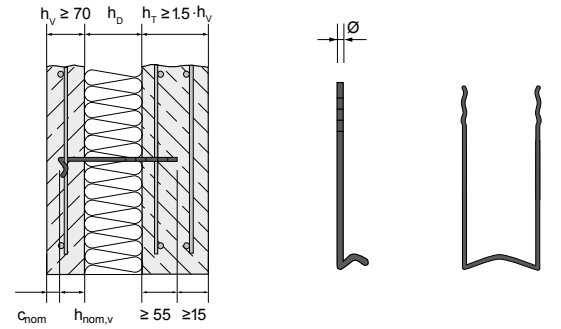
PEC Stirrup Ties SPA-B



Diameter
3.0 mm / 4.0 mm / 5.0 mm

PEC Stirrup Ties SPA-B are bent wires. They are anchored and positioned by hooking the bars around the reinforcement mat. Both ends are anchored in the concrete.

PEC Clip-on Pins SPA-A



Diameter
3.0 mm / 4.0 mm / 5.0 mm

PEC Clip-on Pins SPA-A are connector pins with the addition that the U-shaped end is bent 90 degrees. The corrugated end is anchored in the concrete. On the other side the end is hooked to bars in the reinforcement mesh.

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Selection of successfully completed projects		
Equus 333, Mexico	North America	Cast-in channels & T-Bolts
Carso 2, Mexico	North America	Cast-in channels & T-Bolts
Punta Reforma, Mexico	North America	Cast-in channels & T-Bolts
Latino, Mexico	North America	Cast-in channels & T-Bolts
Clinica Delgado, Peru	South America	Cast-in channels
Huawei, China	Asia	Cast-in channels
Opple Lighting, China	Asia	Cast-in channels
Capital Culture Arts Center, China	Asia	Cast-in channels
SIP Ecology Building, China	Asia	Cast-in channels
Pudong Tangdong, China	Asia	Cast-in channels
Office Building, Australia	Australia	Cast-in channels
Hugo Boss, Outlet City, Germany	Europe	Cast-in channels
Audi Logistic Center, Germany	Europe	Cast-in channels
Flood protection facility, Germany	Europe	Cast-in channels
Motorway Bridge, Austria/Germany	Europe	Cast-in channels
Elbe Sluice, Germany	Europe	Cast-in channels
Coca Cola, Logistic Center, Germany	Europe	Cast-in channels
Bosch, Building with Crane tracks, Germany	Europe	Cast-in channels
Buckingham Gate, UK	Europe	Cast-in channels
Yenitepe Kadiköy, Turkey	Europe	Cast-in channels

Yenitepe Kadiköy, Turkey
PEC cast-in channels

Four Seasons Hotel Tower 2, India
PEC cast-in channels

Suzhou Center, China
PEC cast-in channels

Forest Park, USA
PEC cast-in channels

6 Bevis Marks, UK
PEC cast-in channels

Clinica Delgado, Peru
PEC cast-in channels

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General Terms and Conditions of PEC Europe GmbH

Article 1 Scope of Application
(1) The general terms and conditions below apply to all contracts for the delivery of goods or rendering of services concluded between us and the buyer of goods or orderer of services (hereinafter jointly "Buyer"). They apply also to all future business relations and to the legal relationship prior to conclusion of a contract even if they are not explicitly agreed once again. Any deviating terms and conditions of the Buyer which we do not expressly acknowledge are not binding on us, even if we do not expressly object to them.
(2) Our terms and conditions will be considered to have been accepted on acceptance of our goods or services at the latest.
(3) These general terms and conditions apply exclusively to transac-tions with businessmen, legal entities organised under public law and special funds under public law within the meaning of § 310 (1) of the German Civil Code (BGB).

Article 2 Conclusion of Contract
(1) Our offers are non-binding. Conclusions of contracts and other agreements and guarantees will not become binding until confirmed by us in writing. If an order is to be deemed an offer pursuant to § 145 of the Civil Code, we may accept it within two weeks.
(2) Errors in offers, catalogues, order confirmations, invoices, including calculation and Typeographical errors, are not binding on us. Infor-mation in catalogues, brochures, drawings, advertisements and on websites produced by us are only decisive if we explicitly designate it as binding in contracts.
(3) We reserve the exclusive rights of title, authorship and use in offer- or order-related execution documents or drawings. The same applies to other documents, plans or sketches, machine or tool designs and construction calculations produced by us. These documents must not be passed on to third parties. If conclusion of a contract between us and the Buyer does not come about, at our request these documents must be returned to us without delay.
(4) If forms and objects are to be delivered on the basis of drawings, models or samples that were provided to us by the Buyer, the Buyer warrants that no industrial property rights of third parties will be infringed by the manufacture and delivery.
(5) If we are prohibited from manufacturing and delivering objects that were made on the basis of drawings, models or samples of the Buyer by a third party that refers to property rights owned by it, we are entitled to discontinue manufacture and delivery and to demand reimbursement of the costs incurred without being obliged to examine the legal situation.
(6) In all cases of this Article 2 (4), the Buyer is obliged to indemnify us from third-party compensation claims without delay.
(7) We may destroy samples, drawings and other annexes to the order six months after performance of the contract.

Article 3 Delivery Deadlines and Delivery Dates
(1) Delivery deadlines and dates are only approximate. The prerequi-site for compliance with the delivery period by us is that all commercial and technical issues between us and the Buyer have been resolved and that the Buyer has fulfilled all its obligations, such as presenting the necessary official certificates or permits, submitting the necessary execution documents or making an agreed down-payment. Our delivery is contingent upon our having been supplied in a correct and timely manner by our own suppliers, even if a particular delivery date has been explicitly agreed.
(2) Subject to the above prerequisites, delivery deadlines will com-mence to run on the day following the date of order confirmation, in the event of deviating agreement and in any case no earlier than when there is mutual clarity as to the performance of the delivery. Delivery deadlines and dates refer to the date of dispatch ex works. If it becomes apparent already prior to the date fixed for delivery that the Buyer has committed or will commit a material breach of contract, we are entitled to rescind the contract in whole or in part and – if the Buyer is responsible for the breach – to demand compensation.
(3) Without prejudice to our rights arising from default, delivery dead-lines and dates will be extended by the period by which the Buyer is in default towards us or does not fulfil duties to cooperate.
(4) We are entitled to make partial deliveries, which are deemed an independent transaction in each case, to a reasonable extent. This will not affect the price. If the Buyer intends to call off partial deliveries, the Buyer must call off and divide the partial deliveries in such way that we are able to manufacture and deliver as contractually agreed. If the Buyer does not call off or divide or does not do so in good time, after having set a deadline that has expired without any action having been taken, we are entitled to rescind the contract and/or to demand compensation.
(5) If we have not made a deviating agreement with the Buyer, call-off orders must be taken in hand by the Buyer within five weeks after provision of the delivery.
(6) If the non-compliance with deadlines can be attributed to force majeure, e.g. mobilisation, war, civil disturbances or similar unpredicta-ble occurrences, e.g. strike or lockout, the deadlines will be extended appropriately.
(7) This also applies if such circumstances occur at our own suppliers. If an event of force majeure results in a final, permanent and irreversible performance impediment, we are entitled to rescind the contract.
(8) If default on our part occurs, the Buyer may rescind the contract after expiry of a reasonable grace period set for us to the extent the goods have not been reported as ready for dispatch by expiry of the deadline.
(9) If we do not cause the default in delivery intentionally or grossly negligently, we are liable within the framework of lump-sum compen-sation for default for 1.5 % of the delivery value for each full week of default, but no more than 7.5 % of the delivery value.
(10) Any further statutory rights and claims of the Buyer's due to default in delivery will remain unaffected.

Article 4 Dispatch, Collection and Transfer of Risk
(1) Goods reported as ready for dispatch must be called off by the Buyer without delay. If the Buyer fails to do so, default in acceptance will occur.
(2) Dispatch is made carriage forward ex warehouse (EXW Incoterms 2010) unless otherwise agreed.
(3) When the goods are handed over to the carrier or forwarding agent, however, no later than when they leave the warehouse, the risk will trans-fer to the Buyer, even if the goods are delivered free place of destination. We will insure deliveries against the usual transport risks at the request and expense of the Buyer.
(4) If it is agreed that the buyer collects the goods, the risk passes to the buyer on the day the goods are provided for collection. The date of provision for collection will be communicated to the buyer with advance notice of at least five (5) working days.

Article 5 Developments, Tools and Moulding Equipment
(1) Any tools and moulding equipment needed for our production and procurement that we produce or procure on behalf of a Buyer are our pro-perty even if the Buyer has paid a pro rata share of the tooling costs to us.
(2) A right of exclusive receipt of the tools cannot be granted if a Buyer has paid only a pro rata share of the tooling costs.
(3) If a Buyer – pursuant to agreement with us – pays the full development and manufacturing costs, it is entitled to ownership of this tool and to the right of exclusive receipt of the items manufactured with it.
(4) If developments are carried out on the basis of a Buyer's specifica-tions, we will not check whether existing industrial property rights are infringed. The Buyer is obliged to indemnify us from third-party compen-sation claims owing to infringement of industrial property rights.

Article 6 Prices and Terms of Payment
(1) Unless otherwise agreed in writing, our prices are in euros plus valid VAT ex warehouse.
(2) Transport packaging is invoiced separately.
(3) If, as agreed, we take in cheques, this occurs subject to receipt less costs and expenses with the value date on which we can dispose of the equivalent value.
(4) In case of the Buyer's default in taking delivery, the total payment becomes due 15 days after notification of readiness for shipment.
(5) If it is agreed that the buyer collects the goods, the purchase price is due for payment as soon as the goods are provided for collection.
(6) The payment of the purchase price is effected in euros solely into the accounts disclosed to the Buyer. The Buyer bears the costs of any transfer fees or bank service charges incurred.
(7) The payment of the purchase price must be effected no later than on the agreed date or – in the absence of agreement – immediately, without deduction. The date of receipt of payment into the bank account disclosed to the Buyer is determinative.
(8) The deduction of a cash discount is only admissible in case of written separate agreement and only under the further condition that any and all due payment obligations under previous shipments have been completely fulfilled.
(9) Our prices apply only to the offered or confirmed numbers of articles and the described material and design Types. Additional services must be remunerated separately by the Buyer. The Buyer must assume excess quantities up to 5% of the individual items at the contractual price.
(10) We may initially offset the Buyer's payments against its oldest, non-statute-of-limitations-exempt debts. If costs and interest have already arisen, we are entitled to offset the payment first against the costs, then against the interest and finally against the primary claim. Differently worded payment terms of the Buyer are not binding on us.
(11) If the payment period is exceeded, interest in the amount of 9 percentage points above the base interest rate is owed. Further-reaching compensation claims on our part are reserved.
(12) The Buyer is only entitled to offset claims and to exercise a right of retention if its claim is undisputed, recognised by us and has become final and absolute.
(13) All of our claims will be due immediately if the payment terms have not been complied with or if we are aware of circumstances that are likely to reduce the creditworthiness of the Buyer. In these cases, we are entitled to execute still outstanding deliveries only against advance payment. If default with payment of the Buyer is on hand, we are additionally entitled to rescind the contract and demand compensation. Moreover, we may prohibit the resale and the processing of the delivered goods and to demand their return or the transfer of the indirect possession of the deli-vered goods at the Buyer's costs and to revoke the authorisation to collect receivables pursuant to § 7 (3). In the latter case, the Buyer is obligated to disclose the assigned receivables to us and to cooperate in notifying the third-party debtors of the assignment of receivables.
(14) The Buyer hereby authorises us to set foot on the Buyer's establish-ment in the mentioned cases and to remove the remaining delivered goods – such removal will be deemed rescission of contract; at the same time, we reserve the right to assert further claims against the Buyer, in particular compensation claims.
(15) Reasonable price alternations due to changed wage, material and dis-tribution costs are reserved for deliveries that are executed later than four (4) months after conclusion of contract. This does not apply if an explicit fixed price agreement was made.

Article 7 Reservation of Title
(1) The delivered goods will remain our property until full payment of all our claims under the business relationship. They may be sold only in the proper course of business either against cash payment or by passing on the reservation of title.
(2) Provided the Buyer is not in default with payment, it is entitled to resell the goods under reservation of title in the proper course of business or to otherwise realise them. Pledges or transfers by way of security are inadmissible, just as is the assignment of the Buyer's claim under the resale to a third party with the exception of the assignment to an agent if simultaneously the obligation of the agent – as long as claims of ours against the Buyer exist – is established to effect the the consideration to us directly. Unless the Buyer admissibly assigns receivables from the resale to an agent pursuant to the above sentence, it will herewith assign to us its future receivables from the resale of the goods under reservation of title in the full amount and like other ancillary rights and security rights from the sale and – if joint ownership of the goods subject to reservation of title exists in part corresponding to such joint ownership – until full redemption of all of our claims. We herewith accept this assignment. The Buyer will hold the thus created sole or joint ownership of property on our behalf.
(3) As long as the Buyer complies with its obligations towards us and does not become illiquid, it is revocably entitled to collect the receiva-bles assigned to us for its own account and in its own name. When our receivables are due, the Buyer must immediately pay the collected amounts to us.
(4) The direct debit authorisation can be revoked at any time if the Buy-er does not duly meet its payment obligations. If goods are combined or mixed with other objects, we acquire joint ownership in the new object commensurate with the ratio of the value of our goods subject to reservation of title to that of the other processed goods at the time of processing. Any processing of the delivered goods subject to reservation of title by the Buyer is done for us.
(5) In the event of breaches of duty by the Buyer, particularly default on payment, we are entitled to rescission in addition to repossession of the goods subject to reservation of title.
(6) The Buyer must inform us without delay if a third party carries out enforcement proceedings on the goods subject to reservation of title or on the claims assigned in advance and provide us with the documenta-tion necessary for intervention.

Article 8 Liability for Defects
(1) The time of delivery is determinative for whether the goods are in the contractually agreed condition.
(2) For the Buyer to have warranty rights, the Buyer must have duly satisfied its duty to examine and object to defects under § 377 of the German Commercial Code (HGB).
(3) If the Buyer does not give us an opportunity to assure ourselves of a reported defect, in particular, if the Buyer does not provide the goods objected to or samples of them to us without delay, no claims based this defect may be asserted.
(4) If defects appear, the Buyer must cease working with and processing the defective goods.
(5) If there is a defect in the delivered goods or our service, we are ent-itled, at our choice, to remedy the defect or to deliver new goods or to render new services. If the remedy of the defect or the delivery of new goods or the rendering of new service fails or we are otherwise entitled to refuse to take additional measures, the Buyer is entitled to the rights under statutory law. As a rule, it is reasonable to expect the Buyer to tolerate at least two attempts to remedy defects. Rescission is excluded in the event of insignificant breaches of duty.
(6) If we caused a defect intentionally or through gross negligence or a defect caused culpably by us results in an injury to life, limb or health, the Buyer's warranty claims (arising from defects) will become time-barred in accordance with the rules of statutory law. Warranty claims (arising from defects) also become time-barred in accordance with the rules of statutory law when we deliver an object that has been used in keeping with its usual manner of use for a structure and has caused a deficiency in the structure. Otherwise, warranty claims (arising from defects) become statute-barred one year after delivery.

Article 9 Liability
(1) We are liable for our own wilful conduct or our own gross negligen-ce and for the wilful conduct or the gross negligence of our manage-ment employees. We are also liable for the failure to fulfil warranties, if a procurement risk is assumed, in the event of any culpable injury to life, body or health and within the limits of the liability under the German Product Liability Act (Produkthaftungsgesetz).
(2) We are liable on the merits in the event of any culpable breach of material contractual duties, thus such duties the proper performance of which the Buyer relies on and may rely on, as a rule, for the per-formance of the contract, and in the event of any gross negligence of simple vicarious agents. Our liability under this Article 9 (2) is limited in amount to compensation for the Typeically foreseeable damage.
(3) Any further liability is excluded. Any exclusion or limitation of liabi-lity shall also extend to the personal liability of our employees, workers, staff, representatives and vicarious agents.

Article 10 Place of Performance, Jurisdiction, Applicable Law
(1) The place of performance for payments is Krefeld; the place of performance for deliveries is the place where our warehouse in Germany is located. The courts in Krefeld have jurisdiction for any and all dis-putes arising between us and the Buyer from the contracts concluded between us and the Buyer (including actions concerning cheques and bills of exchange).
(2) The relationships between us and the Buyer are governed exclusively to the laws applicable in the Federal Republic of Germany. The applica-tion of the CISG is excluded.

Article 11 Miscellaneous
(1) We are entitled to store personal data relating to the Buyer as defined in the German Federal Data Protection Act (Bundesdaten-schutzgesetz).
(2) If any provisions of these Terms and Conditions are or become inva-lid or unenforceable in whole or in part, this shall not affect the validity of the other provisions. In such event, the parties undertake already at this time to enter into negotiations with the aim of replacing the invalid or unenforceable provision with a valid provision that reflects as closely as possible the economic intention of the parties with regard to the invalid or unenforceable provision. If there is a lacuna in these Terms and Conditions, what the parties would have agreed on if they had considered such a case is deemed to have been agreed.

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General terms and conditions of PEC Europe GmbH
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