



PreConTech

PTA ANKERSCHIENEN-SYSTEM UND PTU TRAPEZBLECHBEFESTIGUNGSSCHIENEN

PTA ANCHOR CHANNEL SYSTEM AND PTU CAST-IN CHANNELS

**ALLGEMEINE BAUAUFSICHTLICHE ZULASSUNG
GENERAL CERTIFICATE OF APPROVAL**

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PRECONTECH ANKERSCHIENEN-SYSTEM

ZUGELASSEN VOM DEUTSCHEN INSTITUT FÜR BAUTECHNIK (DIBt)
ZULASSUNGSNR. Z-21.4-1856

PRECONTECH ANCHOR CHANNEL SYSTEM

APPROVED BY THE GERMAN CONSTRUCTION MATERIALS SUPERVISORY BOARD (DIBt)
APPROVAL NO. Z-21.4-1856

Wir bieten Ihnen die bauaufsichtlich zugelassene, sichere und wirtschaftliche Lösung für Befestigungen an Stahlbetonteilen für:

- Lasten von 3,0 – 32,0 kN
- ruhende oder dynamische Belastungen
- individuelle Korrosionsbeanspruchungen

Unsere PTA Ankerschienen mit den dazugehörigen BVT Hammer- und Hakenkopfschrauben bilden ein bewährtes Befestigungssystem, das durch weitere Komponenten vielseitig erweiterbar ist. PTA Ankerschienen werden aus kalt oder warm gewalzten Profilen hergestellt in den Ausführungen walzblank, verzinkt oder Edelstahl A2 und A4. Individuell nach Ihren Anforderungen bieten wir Ihnen die Möglichkeit, die PTA Ankerschienen mit I-Anker oder T-Anker zu wählen. In unserem umfangreichen Schraubensortiment bieten wir Ihnen BVT Hammer- und Hakenkopfschrauben in verzinkter Ausführung (Festigkeitsklasse 4.6 und 8.8) sowie aus Edelstahl A2 und A4.

We offer you the officially approved, safe and economic solution for fastening in reinforced concrete parts for:

- loads of 3.0 – 32.0 kN
- resting or dynamic loads
- individual corrosion demands

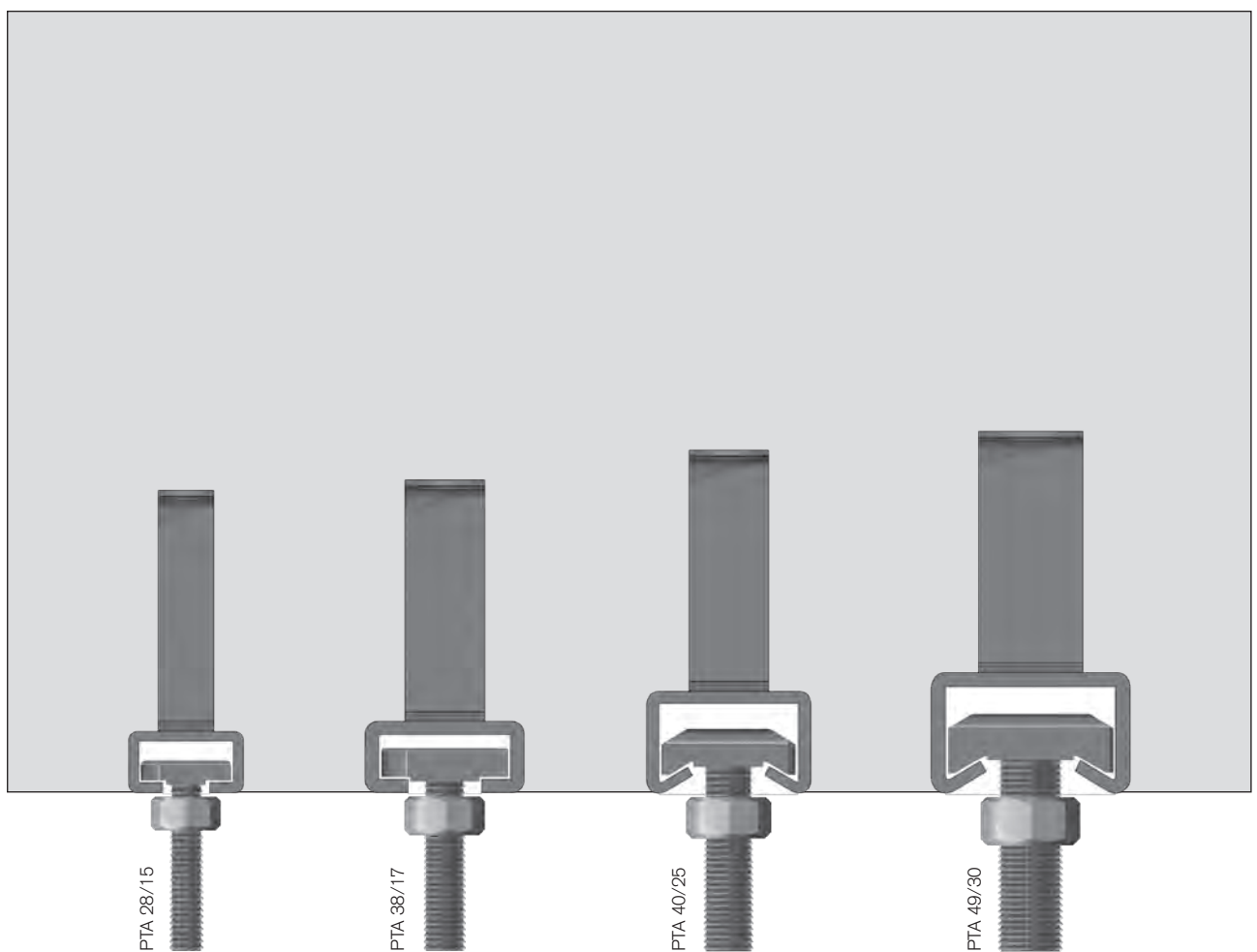
Our PTA Anchor channels with the matching BVT Hammer-head and Hammer-hook bolts form a proven connection system which is versatilely extendable by other components. PTA Anchor channels are produced from cold formed or hot rolled profiles in the styles mill finished, galvanized or stainless steel A2 and A4. According to your individual requirements we provide you with the possibility to choose the PTA Anchor channels with I-Anchor or T-Anchor. In our extensive bolt assortment we offer you BVT Hammer-head and Hammer-hook bolts in galvanized styles (steel grade 4.6 and 8.8) as well as from stainless steel A2 and A4.

PTA ANKERSCHIENEN + BVT HAMMER- UND HAKENKOPFSCHRAUBEN PTA ANCHOR CHANNELS + BVT HAMMER-HEAD AND HAMMER-HOOK BOLTS

PTA Ankerschienen 28/15, 38/17, 40/25 und 49/30 werden auf mehrstufigen Profilieranlagen vom Band kalt gefertigt.

PTA Anchor Channels 28/15, 38/17, 40/25 und 49/30 are produced cold formed on a multi-stage profile system.

Kalt gewalzte PTA Ankerschienen Cold formed PTA Anchor channels

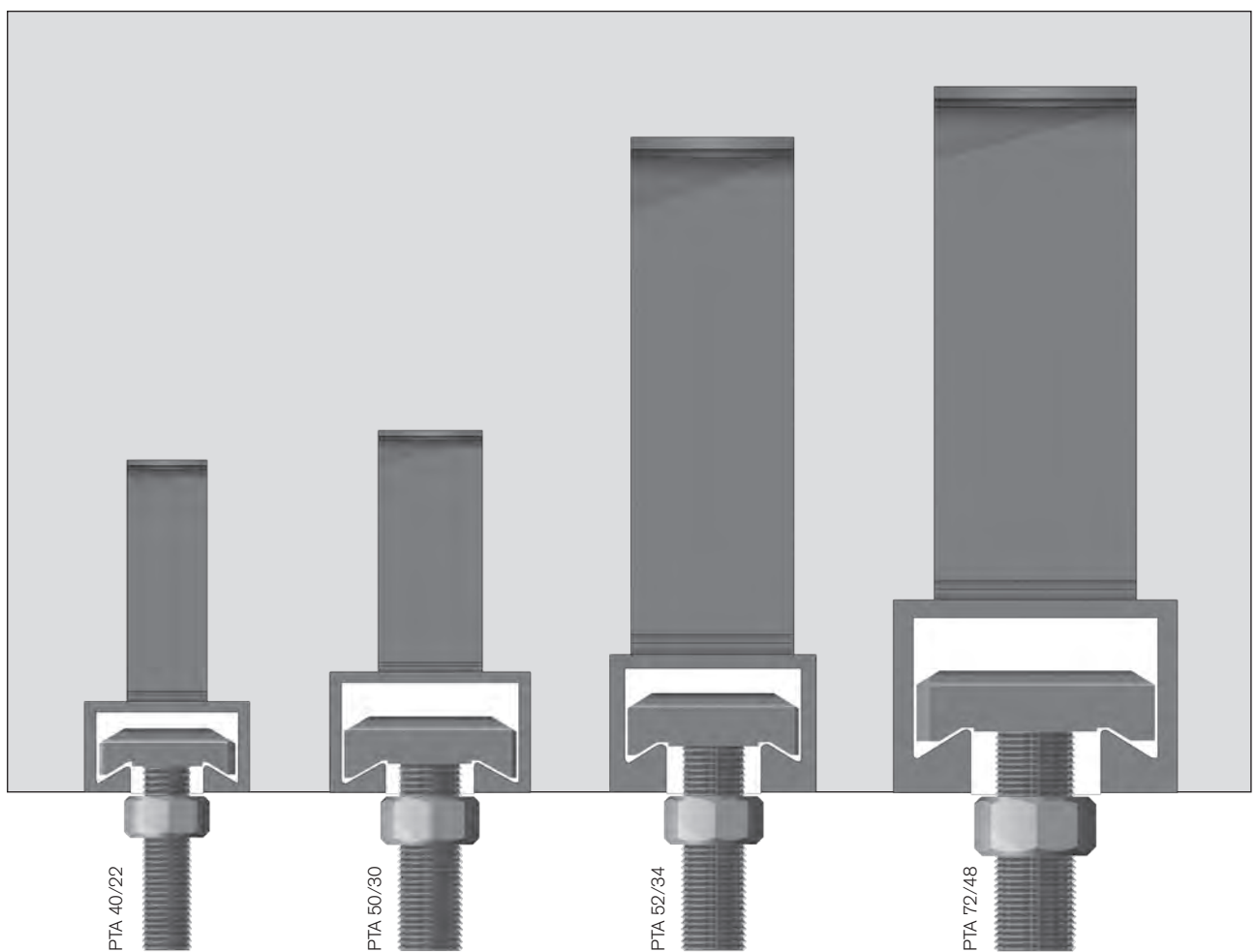


PTA ANKERSCHIENEN + BVT HAMMER- UND HAKENKOPFSCHRAUBEN PTA ANCHOR CHANNELS + BVT HAMMER-HEAD AND HAMMER-HOOK BOLTS

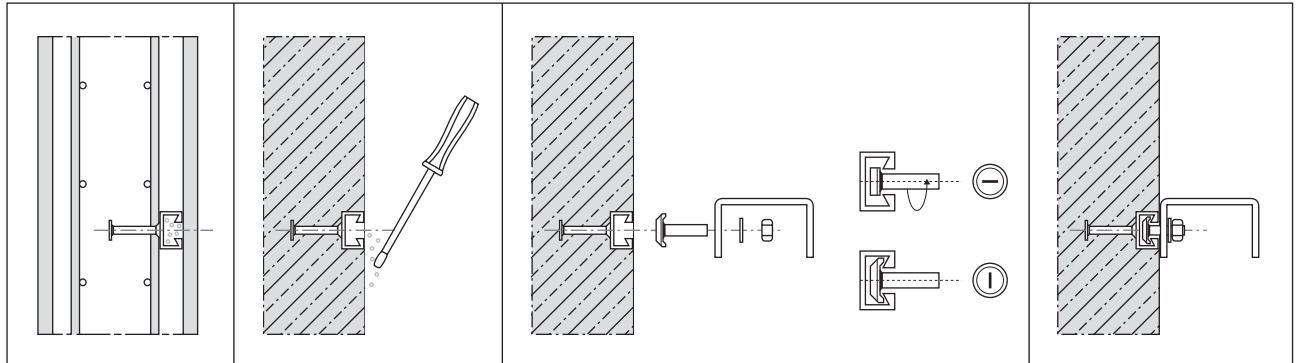
PTA Ankerschienen 40/22, 50/30, 52/34 und 72/48 werden aus einem Stahlblock warm gewalzt hergestellt.

PTA Anchor Channels 40/22, 50/30, 52/34 und 72/48 are produced hot rolled made out of a steel ingot.

Warm gewalzte PTA Ankerschienen
Hot rolled PTA Anchor channels



MONTAGE ASSEMBLING



PTA Ankerschiene
auf der Schalung
plazieren.

Place the PTA
Anchor channel on
the formwork.

Vollschäumfüllung
entfernen bevor die
Schraube eingedreht
wird.

Remove the filling
before you screw in
the bolt.

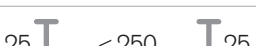
Befestigungskomponente mit BVT Schraube
und Mutter montieren.

Assemble the fixing component with BVT bolt
and nut.

Nach dem Justieren
wird die Mutter mit
den vorgeschriebenen
Anzugsdrehmoment
festgezogen.

After justifying lock
the nut with the initial
torque.

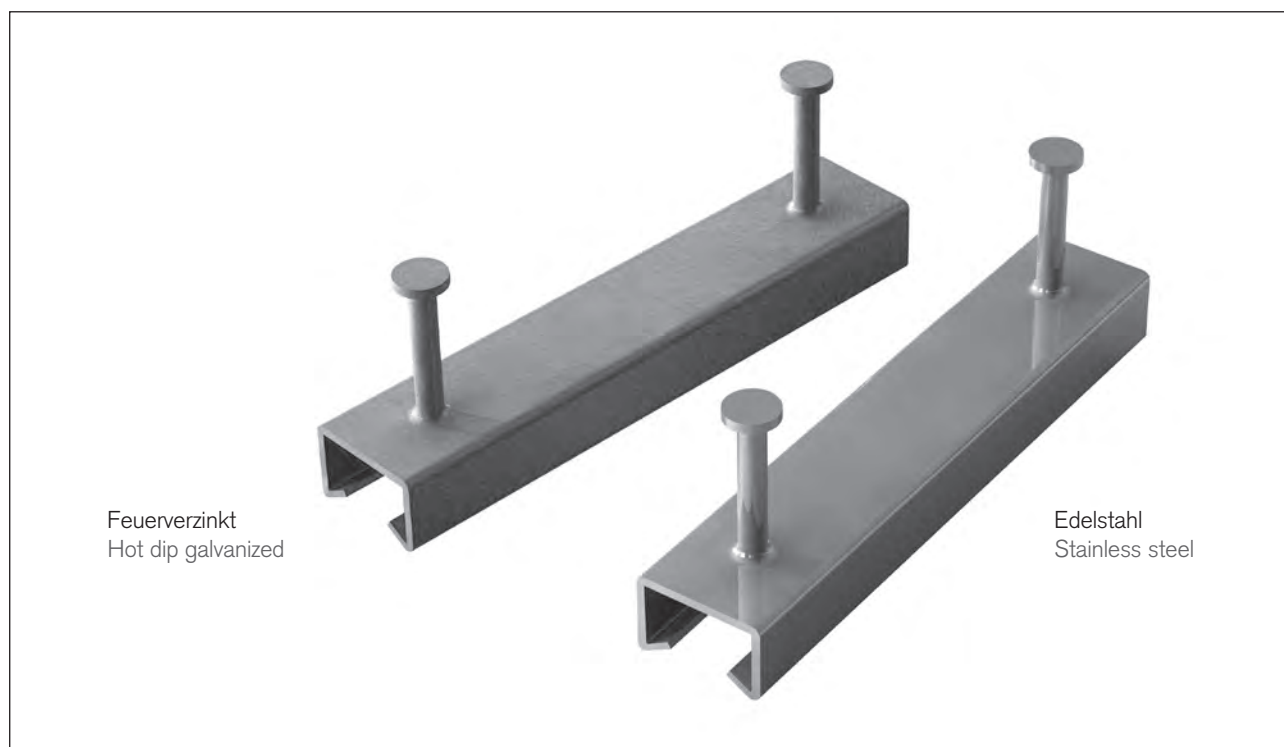
REGELLÄNGEN UND ANKERANORDNUNG STANDARD LENGTHS AND ANCHOR ARRANGEMENT

Schienenlänge Channel length	Achsabstand der Anker Distance between axes of anchors
150 mm	25  25
200 mm	25  25
250 mm	25  25
> 250 mm	25  < 250 25 25  < 250 < 250 25

KENNZEICHNUNG DER PTA ANKERSCHIENE UND BVT SCHRAUBE MARKING OF PTA ANCHOR CHANNEL AND BVT BOLT



WERKSTOFFE MATERIALS



Stahl Steel

Profile Profiles	Walzblank S235JR = 1.0037 St 37-2 Mill finish S235JR = 1.0037 St 37-2	Feuerverzinkt S235JR = 1.0037 St 37-2 Hot dip galvanized S235JR = 1.0037 St 37-2	Sendzimir S235JR = 1.0037 St 02 Z 275 Sendzimir S235JR = 1.0037 St 02 Z 275	DIN EN 10025
Anker Anchors	Walzblank S235JR = 1.0037 St 37-2 Mill finish S235JR = 1.0037 St 37-2	Feuerverzinkt S235JR = 1.0037 St 37-2 Hot dip galvanized S235JR = 1.0037 St 37-2	Sendzimir S235JR = 1.0037 St 02 Z 275 Sendzimir S235JR = 1.0037 St 02 Z 275	DIN EN 10025
Schrauben Bolts	Galvanisch verzinkt Festigkeitsklasse 4.6 + 8.8 Galvanized Steel grade 4.6 + 8.8	Feuerverzinkt Festigkeitsklasse 4.6 + 8.8 Hot dip galvanized Steel grade 4.6 + 8.8		DIN ISO 898-1
Muttern Nuts	Mind. Festigkeitsklasse 5 Min. Steel grade 5			DIN EN 20898-2

Edelstahl Stainless steel

Profile Profiles	A2 Edelstahl 1.4301 A2 Stainless steel 1.4301	A4 Edelstahl 1.4571 A4 Stainless steel 1.4571	DIN EN 10088
Anker Anchors	A2 Edelstahl 1.4301 A2 Stainless steel 1.4301	A4 Edelstahl 1.4401/1.4404/1.4571 A4 Stainless steel 1.4401/1.4404/1.4571	DIN EN 1008
Schrauben Bolts	Werkstoffgüte A2-70 Material grade A2-70	Werkstoffgüte A4-50/A4-70 Material grade A4-50/A4-70	DIN EN ISO 3506-1
Muttern Nuts	Werkstoffgüte A2-70 Material grade A2-70	Werkstoffgüte A4-50/A4-70 Material grade A4-50/A4-70	DIN EN ISO 3506-2

KORROSIONSSCHUTZANFORDERUNGEN

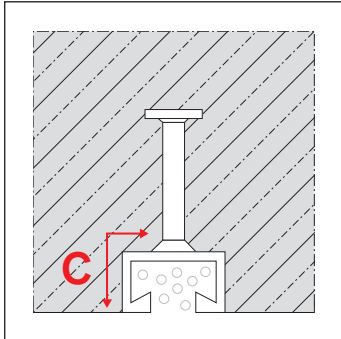
CORROSION PROTECTION REQUIREMENTS

Korrosionsschutz der Bauteile Corrosion protection of components			Anwendungsbereich Scope of application
Schiene Channel	Anker Anchor	Schraube und Mutter Bolt and nut	
Walzblank Mill finish	Walzblank Mill finish	Ohne Korrosionsschutz Without corrosion protection	Verwendung nur möglich, wenn alle Befestigungselemente in Abhängigkeit der Umgebungsbedingungen durch eine Mindestbetonabdeckung nach DIN 1045-1:2001-07, Tab. 4 geschützt sind. Use only possible if all connection elements are protected in dependence on the surroundings terms by a minimum concrete cover according to DIN 1045-1:2001-07, Tab. 4.
Feuerverzinkt (Auflage $\geq 50 \mu\text{m}$) Hot dip galvanized (Coating $\geq 50 \mu\text{m}$)	Feuerverzinkt (Auflage $\geq 50 \mu\text{m}$) Hot dip galvanized (Coating $\geq 50 \mu\text{m}$)	Galvanisch verzinkt (Auflage $\geq 5 \mu\text{m}$) Mechanisch verzinkt (Auflage $\geq 10 \mu\text{m}$) Electroplated (Coating $\geq 5 \mu\text{m}$) Sheradized (Coating $\geq 10 \mu\text{m}$)	Betonbauteile in geschlossenen Räumen, z.B. Wohnungen, Büros, Schulen, Krankenhäuser, Verkaufsstätten – mit Ausnahme von Feuchträumen. Concrete elements for interior use, e.g. flats, offices, schools, hospitals, shops – with exception of humid rooms.
Feuerverzinkt (Auflage $\geq 50 \mu\text{m}$) Hot dip galvanized (Coating $\geq 50 \mu\text{m}$)	Feuerverzinkt (Auflage $\geq 50 \mu\text{m}$) Hot dip galvanized (Coating $\geq 50 \mu\text{m}$)	Feuerverzinkt ① (Auflage $\geq 40 \mu\text{m}$) Hot dip galvanized ① (Coating $\geq 40 \mu\text{m}$)	Betonbauteile in Innenräumen mit normaler Luftfeuchte (einschl. Küche, Bad, Waschküche in Wohngebäuden) nach DIN 1045-1:2001-07, Tab. 3 XC1. Concrete elements in interior rooms with regular air humidity (incl. kitchen, bath, laundry room in residential buildings) acc. DIN 1045-1:2001-07, Tab. 3 XC1.
Edelstahl 1.4401/1.4404/1.4571 Stainless steel 1.4401/1.4404/1.4571	Walzblank ② ③ Edelstahl 1.4401/1.4404/1.4571 Mill finish ② ③ Stainless steel 1.4401/1.4404/1.4571	Edelstahl 1.4401/1.4404/1.4571 A4-50 A4-70 Stainless steel 1.4401/1.4404/1.4571 A4-50 A4-70	Betonbauteile der Korrosionswiderstandsklasse III nach Z-30.3-6, z.B. in Feuchträumen, im Freien, Industrielatmosphäre und der Meeresnähe, ohne weitere Korrosionsbelastung. Concrete elements acc. to corrosion resistance class III acc. Z-30.3-6, e.g. in humid rooms, outdoor, industrial atmosphere and immediate proximity of the ocean, without further corrosion.

① Oder galvanisch verzinkt mit Sonderbeschichtung, Auflage $\geq 12 \mu\text{m}$.
Or galvanized with special coating, coating $\geq 12 \mu\text{m}$.

② Für PTA 28/15 und PTA 38/17 nur aus Edelstahl zulässig.
For PTA 28/15 and PTA 38/17 permitted only in stainless steel.

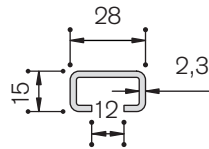
③ Hinsichtlich des Korrosionsschutzes der Anker darf folgende Betonüberdeckung C zugrunde gelegt werden.
With regard to the corrosion protection of the anchor the following concrete cover C is the basis.



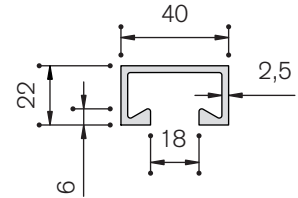
Profil PTA	40/22	40/25	49/30, 50/30, 52/34	72/48
C [mm]	30	35	40	60

MAßE PTA ANKERSCHIENEN-PROFILE DIMENSIONS PTA ANCHOR CHANNEL PROFILES

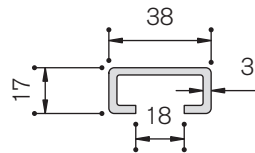
PTA 28/15



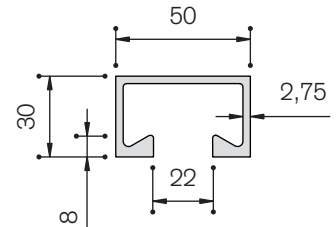
PTA 40/22



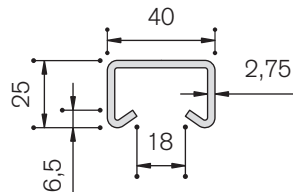
PTA 38/17



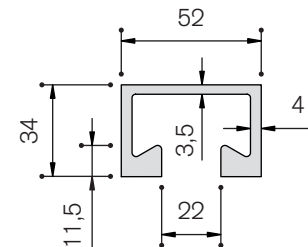
PTA 50/30



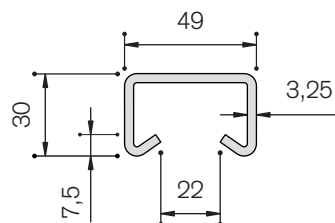
PTA 40/25



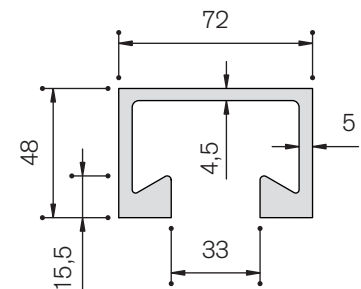
PTA 52/34



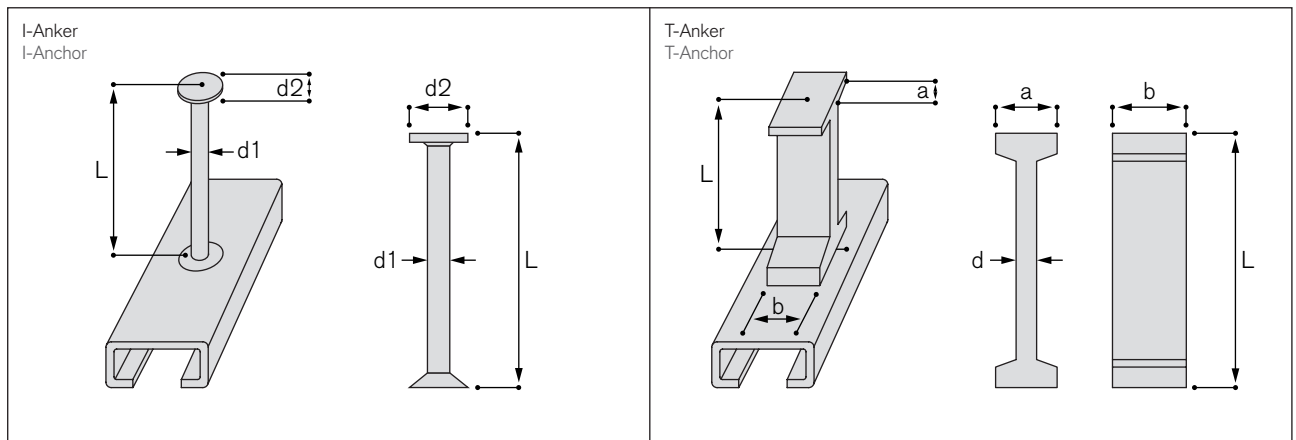
PTA 49/30



PTA 72/48



PTA Ankerschienen werden mit 2 Ankervarianten gefertigt
PTA Anchor channels are produced with 2 anchor styles



Schienenprofil Channel profile	I-Anker [mm] I-Anchor [mm]			T-Anker [mm] T-Anchor [mm]			
	L ①	d1	d2	L	a	b	d
28/15	42	6	12	60	15	15	4
38/17	57,5	8	16	60	15	20	4
40/25	61,5	8	16	60	15	20	4
40/22	61,5	8	16	60	15	20	4
49/30	72	10	20	60	15	25	4
50/30	72	10	20	60	15	25	4
52/34 ②	-	-	-	125	20	40	5
72/48 ②	-	-	-	125	20	50	5

① Mindestlänge der I-Anker
 Minimum length of I-Anchors

② Warm gewalzte PTA Ankerschienen Profil 52/34 + 72/48 sind nur mit T-Ankern erhältlich
 Hot rolled PTA Anchor channels profile 52/34 + 72/48 are just available with T-Anchors

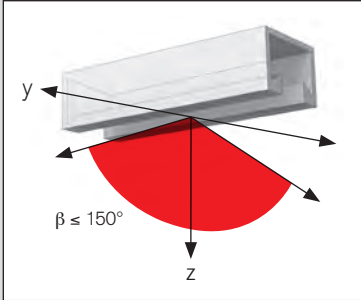
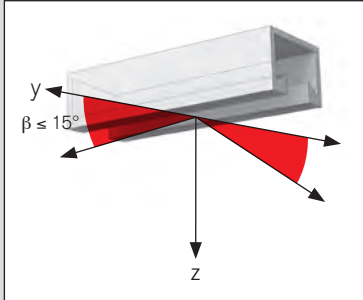
BEANSPRUCHUNGSBEREICHE DER PTA ANKERSCHIENEN SENKRECHT ZUR SCHIENENLÄNGSACHSE

STRESS RANGES OF THE PTA ANCHOR CHANNELS AT RIGHT ANGLES TO THE CHANNEL LONGITUDINAL AXIS

PTA Ankerschienen können zentrischen Zug, Schrägzug und Querkzug aufnehmen. Dabei darf die Lastresultierende die zulässigen Lasten gemäß untenstehender Tabelle nicht überschritten werden.

PTA Anchor channels are able to absorb central pull, transverse shear and shear load in accordance with the stress ranges illustrated. In this case, the resultant load must not exceed the permissible loads according to the table shown below.

Zulässige Lasten Allowable loads

Profil Profile	Zulässige Lasten [kN] Allowable loads [kN]							
	Zentrischer Zug und Schrägzug Central pull and transverse shear					Querkzug und Schrägzug Shear load		
								
	Einzellasten Point loads			Lastenpaare Load pairs		Einzellasten Point loads		Lastenpaare Load pairs
	10 cm	15–25 cm	> 25 cm	20–25 cm	≥ 25 cm	10 cm	≥ 15 cm	≥ 20 cm
28/15	3,5	3,5	3,0	3,0	2,0	3,5	3,5	3,0
38/17	7,0	7,0	4,5	4,5	3,0	8,0	8,0	4,5
40/25 40/22	-	8,0	6,0	6,0	4,0	-	10,0	6,0
49/30 50/30	-	12,0	10,0	7,0	5,0	-	12,0	7,0
52/34	-	22,0 (25,0)	22,0 (25,0)	11,0 (12,5)	11,0 (12,5)	-	22,0 (25,0)	11,0 (12,5)
72/48	-	27,0 (32,0)	27,0 (32,0)	13,5 (16,0)	13,5 (16,0)	-	27,0 (32,0)	13,5 (16,0)

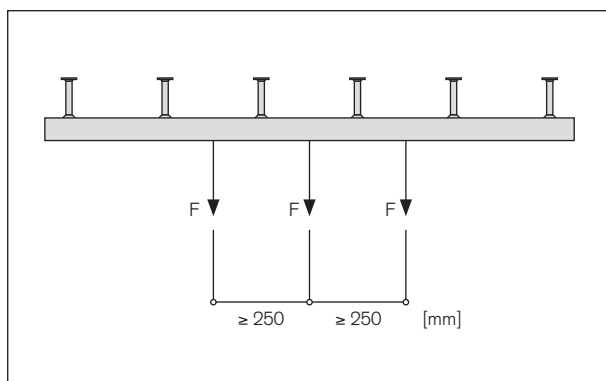
Mindestbetonfestigkeitsklasse ≥ B25
Minimum concrete grade ≥ B25

Für Betonfestigkeit ≥ B35 Angaben in Klammern © (Siehe S. 17)
For concrete grade ≥ B35 values in brackets © (See p. 17)

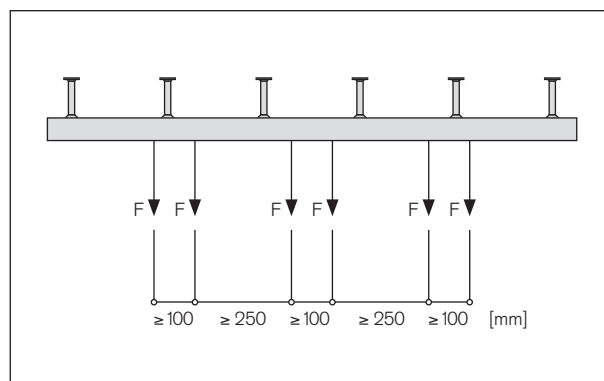
Bemessung nach DIN / Design resistance to 1045-1:2001-07
 $F_{Rd} = \text{zul./perm. } F \times 1,4$

LASTENANORDNUNG LOAD ARRANGEMENT

Einzellasten
Single loads

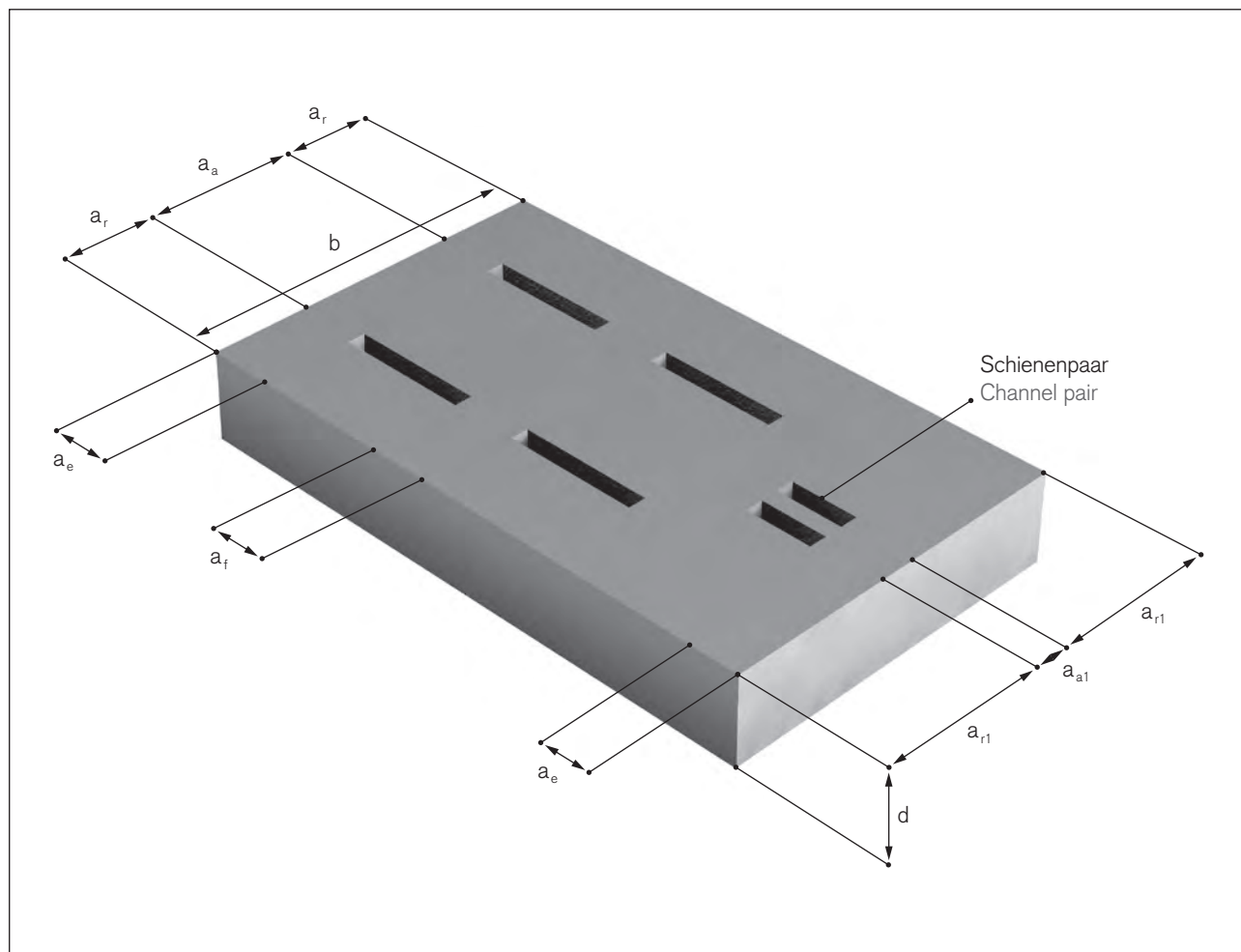


Lastenpaare
Load pairs



MINDESTABSTÄNDE UND MINDESTBAUTEILABMESSUNGEN MINIMUM DISTANCES AND MINIMUM ELEMENT DIMENSIONS

Profil Profile	Mindestabstände und Mindestbauteilabmessungen [cm] ① Minimum distances and minimum element dimensions [cm] ①							
	Einzelschienen Single channels						Schienenpaar ⑤ Channel pair ⑤	
	a_r ⑦	a_a	a_e	a_f	b ③	d ④	a_{r1}	a_{a1}
28/15	5,0	10,0	4,0	8,0	10,0		5,0	10,0
38/17	7,5	15,0	5,0	10,0	15,0		10,0	10,0
40/25 40/22	10,0	20,0	8,0 (7,0) ②	20,0	20,0		14,0	12,5
49/30 50/30	15,0	30,0	13,0 (10,0) ②	25,0	30,0		22,5	15,0
52/34	20,0	40,0	17,5	35,0	40,0		-	-
72/48	25,0	50,0	22,5	45,0	50,0		-	-



- ① Die angegebenen Mindestabstände gelten für bewehrten Beton. Bei Vergrößerung der Abstände um 30% werden an die Bewehrung keine Anforderungen gestellt.
The minimum spacings given in the table apply to standard reinforced concrete. For unreinforced concrete the minimum spacings should be increased by 30%.
- ② Maße in Klammern gelten für vorhanden $a_s \geq 2 \times \text{zul. } a_s$.
Dimensions in brackets apply when actual $a_s \geq 2 \times \text{allow. } a_s$.
- ③ Mindestbauteilbreite $b = 2 \times a_s$ gilt bei Anordnung einer Schiene.
Minimum structural component width $b = 2 \times a_s$ needed for the channel to fit.
- ④ Ergibt sich aus der geringsten zulässigen Länge der Anker und der erforderlichen Betondeckung nach DIN 1045.
The thickness of the concrete depends on the length of the anchor and the necessary concrete cover in accordance with DIN 1045.
- ⑤ Nur zentrischer Zug zulässig.
Only applicable for central pull.
- ⑥ Nur zulässig, wenn die Dehnung des Betons quer zur Schienenlängsachse durch Bewehrung (je ein Stab BSt 500 S, $d_s \geq 8$ mm im Bereich der Anker) oder durch Querdruck behindert wird.
Allowable loads in concrete are only permitted when additional crack prevention reinforcement (min. 8 mm bars grade BSt 500 S around the anchor) or transversal pressure are used.
- ⑦ Bei Beanspruchung auf Querkzug und Schrägzug darf zum unbelasteten Bauteilrand der Abstand a_s auf $a_s/2$ bzw. mind. 5 cm reduziert werden, wenn analog zur Anlage 9 eine Rückhängebewehrung angeordnet wird.
For shear loads acting away from the edge of the concrete, the distance a_s may be reduced to $a_s/2$ or min. 5 cm, provided reinforcement is fitted as shown in appendix 9.

Mind. Betonfestigkeitsklasse:

Bei Verankerung im Beton mit der Festigkeitsklasse C 12/15 (B15)* sind die zulässigen Lasten für C 20/25 (25)* mit dem Faktor 0,7 bei Leichtbeton (gefügedicht) $\geq$ LC 25/28 (LB25)* (Zuschlag aus Blähbeton, Blähschiefer oder Bims) mit dem Faktor 2/3 zu reduzieren.

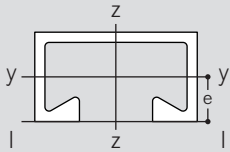
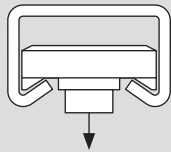
Min. concrete strength:

When fixing in concrete with concrete strength C 12/15 (B15)* the allowable loads for C 20/25 (25)* should be reduced by the factor 0.7 and for structural lightweight concrete $\geq$ LC 25/28 (LB25)* (expanded clay) by the factor of 2/3.

*Festigkeitsangaben nach DIN 1045-1:2001-07 (Klammerwerte)
Concrete strength according to DIN 1045-1:2001-07 (Values in brackets)

QUERSCHNITTSWERTE, TRÄGHEITS- UND WIDERSTANDSMOMENTE, PUNKTTRAGFÄHIGKEIT

CROSS SECTION PROPERTIES, MOMENTS OF INERTIA AND RESISTANCE, POINT LOAD BEARING CAPACITY

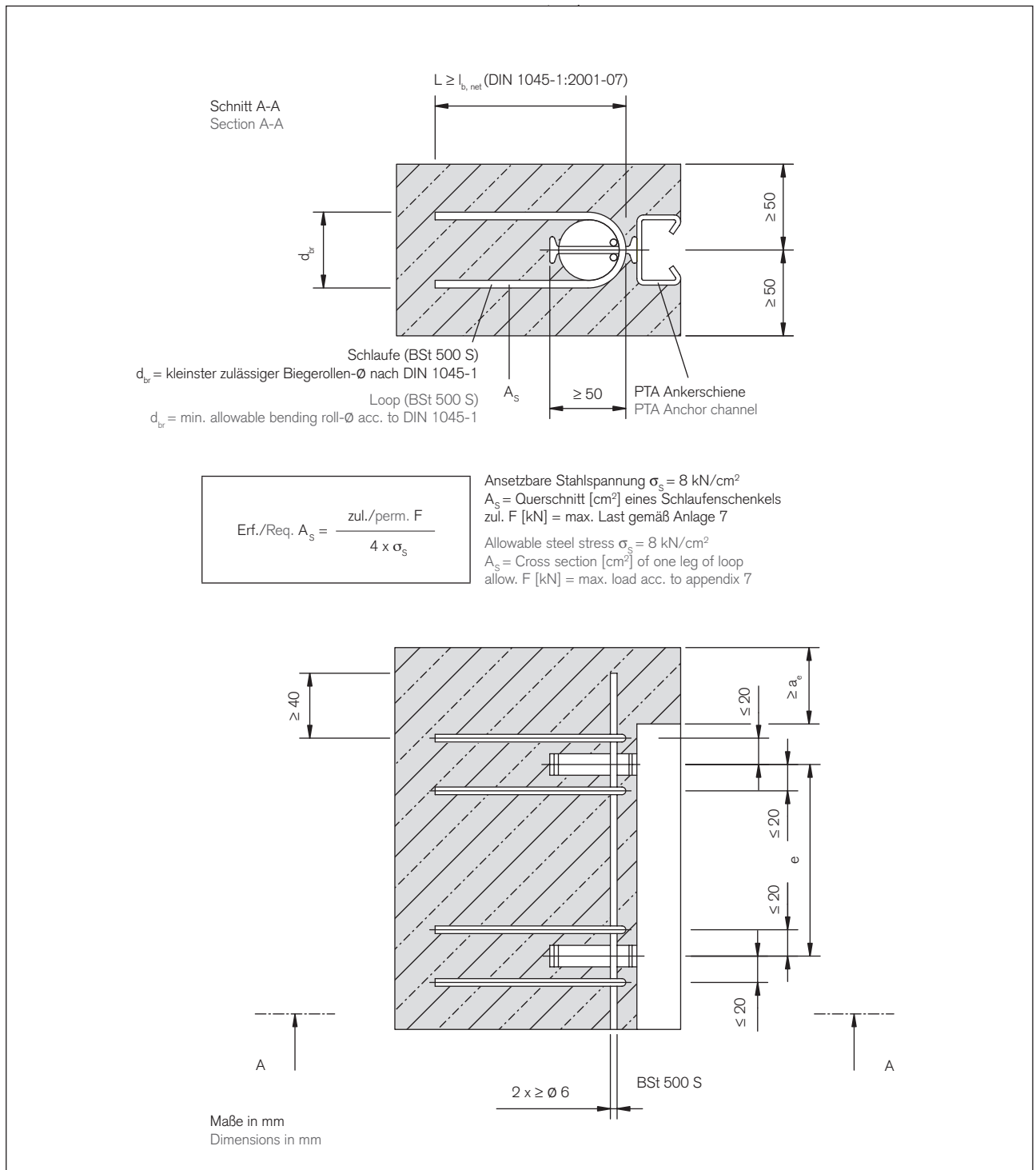
Profil Profile	Querschnittswerte Cross section properties 						Max. Punkttragfähigkeit [kN] Max. point load bearing capacity [kN] 	
	Querschnitt Cross section	Schwerpunkt Centre of gravity	Trägheitsmomente Moments of inertia		Widerstandsmomente Moments of resistance		zul./perm. F	F _{Rd}
	A [cm ²]	e [cm]	I _y [cm ⁴]	I _z [cm ⁴]	W _y [cm ³]	W _z [cm ³]		
28/15	1,38	0,89	0,39	1,39	0,44	1,00	3,5	4,9
38/17	2,25	1,05	0,82	4,11	0,78	2,16	7,0	9,8
40/25	2,56	1,45	1,90	5,75	1,31	2,88	8,0	11,2
40/22	2,70	1,22	1,99	5,92	1,63	3,00	8,0	11,2
49/30	3,87	1,82	4,68	13,71	2,56	5,49	12,0	16,8
50/30	4,15	1,54	5,29	14,18	3,43	5,79	12,0	16,8
53/34	6,32	1,68	9,40	24,12	5,48	9,19	25,0	35,0
72/48	11,27	2,41	34,99	83,46	14,31	23,18	35,0	49,0

Die Schraubentragfähigkeit und die max. Punkttragfähigkeit sind zu beachten.
Der jeweils niedrigere Wert ist maßgebend.

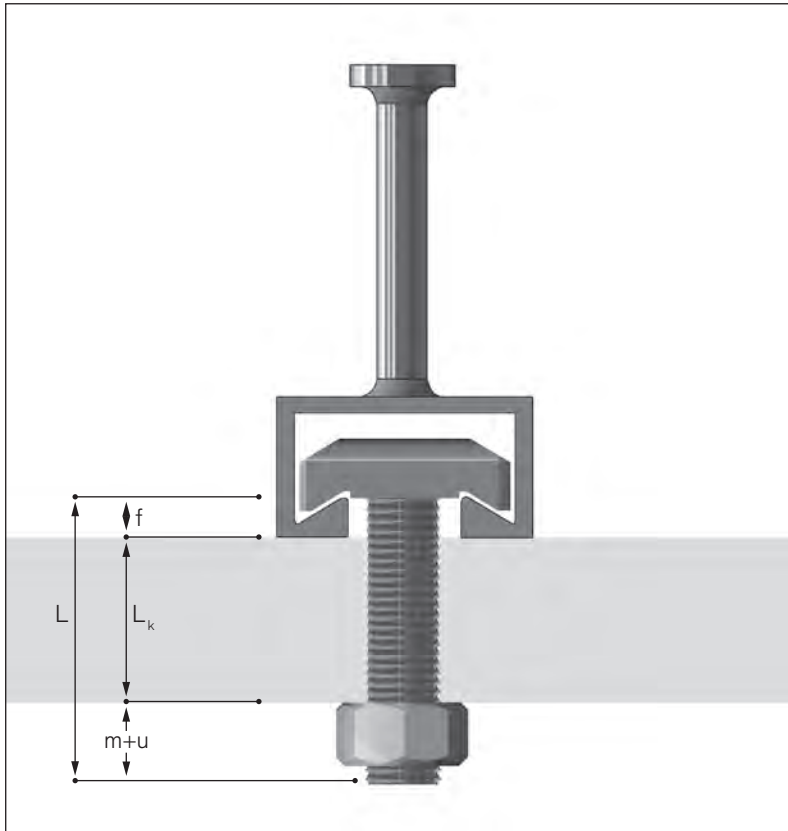
The bolt load-bearing capacity and the max. point load-bearing capacity are to be considered.
The lowest value in each case is authoritative.

REDUZIERTER RANDABSTAND BEI BEANSPRUCHUNG AUF ZUG UND ANORDNUNG EINER ZUSÄTZLICHEN BEWEHRUNG FÜR PROFILE PTA 28/15 BIS PTA 50/30

REDUCED EDGE SPACING WHEN STRESSED FULLY IN CENTRAL TENSION WITH ADDITIONAL REINFORCEMENT FOR PROFILES PTA 28/15 TO PTA 50/30



ERMITTLUNG DER ERFORDERLICHEN SCHRAUBENLÄNGE DETERMINATION OF NECESSARY BOLT LENGTH



L = Schraubenlänge
Length of bolt

L_k = Dicke des Anschlußbauteils
Thickness of connection part

f = Stärke des Profils
Thickness of profile

m = Höhe der Mutter
Height of nut

u = Überstand der Schrauben
Overlap of bolt

Erforderliche Schraubenlänge in mm:
Erf. $L = L_k + f + (m + u)$

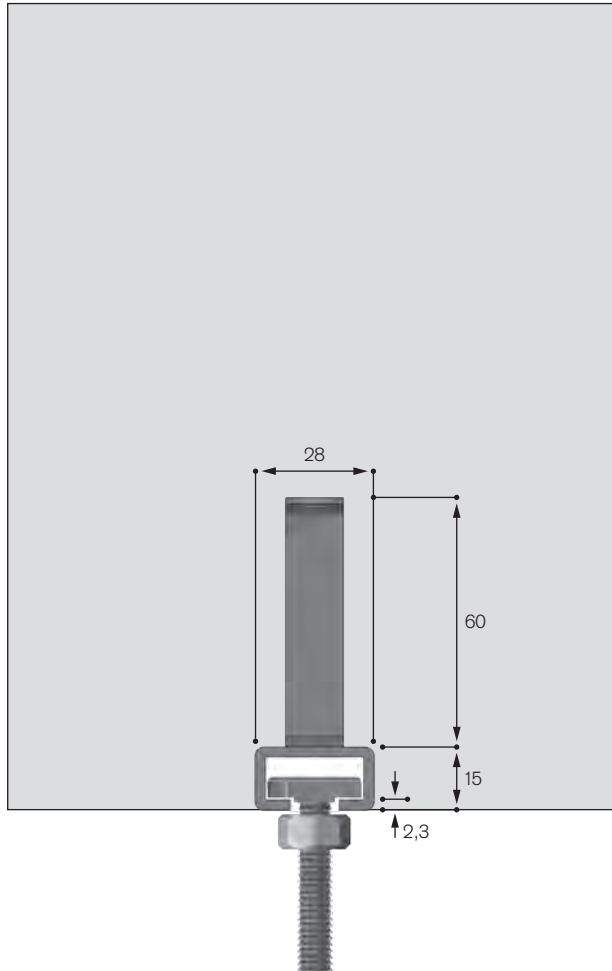
Necessary screw length in mm:
Nec. $L = L_k + f + (m + u)$

Schraube Bolt	$m + u$ [mm]
M 6	8,8
M 8	11,3
M 10	13,9
M 12	17,3
M 16	21,8
M 20	27,0

PTA Ankerschiene 28/15 BVT Hammerkopfschraube für PTA Ankerschiene 28/15	22/23
.....	
Anchor channel PTA 28/15 BVT Hammer-head bolt for PTA Anchor channel 28/15	
.....	
PTA Ankerschiene 38/17 BVT Hammerkopfschraube für PTA Ankerschiene 38/17	24/25
.....	
Anchor channel PTA 38/17 BVT Hammer-head bolt for PTA Anchor channel 38/17	
.....	
PTA Ankerschiene 40/25 + 40/22 BVT Hakenkopfschraube für PTA Ankerschiene 40/25 + 40/22	26/27
.....	
Anchor channel PTA 40/25 + 40/22 BVT Hammer-hook bolt for PTA Anchor channel 40/25 + 40/22	
.....	
PTA Ankerschiene 49/30 + 50/30 BVT Hakenkopfschraube für PTA Ankerschiene 49/30 + 50/30	28/29
.....	
Anchor channel PTA 49/30 + 50/30 BVT Hammer-hook bolt for PTA Anchor channel 49/30 + 50/30	
.....	
PTA Ankerschiene 52/34 + 54/33 BVT Hakenkopfschraube für PTA Ankerschiene 52/34 + 54/33	30/31
.....	
Anchor channel PTA 52/34 + 54/33 BVT Hammer-hook bolt for PTA Anchor channel 52/34 + 54/33	
.....	
PTA Ankerschiene 72/48 BVT Hakenkopfschraube für PTA Ankerschiene 72/48	32/33
.....	
Anchor channel PTA 72/48 BVT Hammer-hook bolt for PTA Anchor channel 72/48	
.....	
PTU Trapezblechbefestigungsschienen PTU Cast-in channels	45–53
.....	

PTA ANKERSCHIENE 28/15 LASTSTUFE 3,0 + 3,5 kN*

PTA ANCHOR CHANNEL 28/15 LOAD CAPACITY 3.0 + 3.5 kN*



	Länge [mm] Length [mm]	Anker Anchors	Ankerabstand Anchor distance
Kurzstücke Short pieces	100	2	50
	150	2	100
	200	2	150
	250	2	200
	300	2	250
	350 – 550	3	≤ 250
	600 – 800	4	≤ 250
	850 – 1050	5	≤ 250
Fixlängen Cut lengths	1050 – 6000 auf Anfrage on request		≤ 250
Lagerlängen Stock lengths	6000 (-0/+ 50)	25	≤ 250

* Maximal zulässige Last gemäß bauaufsichtlicher Zulassung für Betonfestigkeitsklassen $\geq$ C20/25 (B25).
Zweiter Wert gilt für Kurzstücke 100 – 250 mm. Zulässige Lasten für den jeweiligen Anwendungsfall siehe Seite 14.
Maximal permissible load according to official approval. For concrete strength $\geq$ C20/25 (B25).
The second value applies to short pieces 100 – 250 mm. Allowable loads for the respective application case see page 14.

Bestellbeispiel Ankerschienen
Order example anchor channel

50

Art.-Nr.
Art.-No.

28/15

Profil
Profile

0150

Länge
Length

i

Anker ausf. Material
Anchor vers. Material

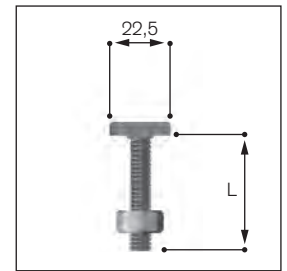
zn



PreConTech

BVT HAMMERKOPFSCHRAUBE MIT SECHSKANTMUTTER DIN 934 FÜR PTA ANKERSCHIENE 28/15

BVT HAMMER-HEAD BOLT WITH HEXAGONAL NUT DIN 934 FOR PTA ANCHOR CHANNEL 28/15



Länge Length	M	zn	A4	M	zn	A4	M	zn	A4	M	zn	A4
15 mm	6	•	-	8	•	-	10	•	-	12	-	-
20 mm	6	•	-	8	•	•	10	•	•	12	-	-
25 mm	6	•	-	8	•	-	10	•	•	12	-	-
30 mm	6	•	-	8	•	•	10	•	•	12	•	-
35 mm	6	-	-	8	•	-	10	•	•	12	-	-
40 mm	6	•	-	8	•	•	10	•	•	12	-	-
50 mm	6	•	-	8	•	•	10	•	•	12	•	-
60 mm	6	•	-	8	•	•	10	•	•	12	-	-
70 mm	6	-	-	8	•	-	10	•	•	12	-	-
80 mm	6	-	-	8	•	-	10	•	•	12	-	-
90 mm	6	-	-	8	-	-	10	•	•	12	-	-
100 mm	6	-	-	8	•	-	10	•	•	12	•	-
125 mm	6	-	-	8	•	-	10	•	•	12	-	-
150 mm	6	-	-	8	•	-	10	•	•	12	-	-
175 mm	6	-	-	8	-	-	10	•	•	12	-	-
200 mm	6	-	-	8	-	-	10	•	•	12	-	-

zn = Festigkeitsklasse 4.6, Festigkeitsklasse 8.8 auf Anfrage
zn = Steel grade 4.6, Steel grade 8.8 on request

• = Lagerware/on stock - = auf Anfrage/on request

Zulässige Lasten, Biegemomente und Anzugsdrehmoment Allowable loads, bending moments and tightening torque

Gewinde Thread	Zulässige Lasten Allowable Loads			Zulässige Biegemomente Allowable bending moments			Anzugsdrehmoment Tightening torque
	4.6 [kN]	A4-50 [kN]	A4-70 [kN]	4.6 [Nm]	A4-50 [Nm]	A4-70 [Nm]	
M 6	2,2	2,2	3,0	2,0	1,8	3,8	3,0
M 8	4,0	4,0	5,5	5,0	4,4	9,4	8,0
M 10	6,4	6,4	8,7	10,0	8,7	18,7	15,0
M 12	9,3	9,3	12,6	17,5	15,3	32,8 ①	25,0

① Für das Profil PTA 28/15 ist das zulässige Schrauben-Biegemoment bei einer Schienenlänge von > 250 mm auf 30 Nm zu reduzieren.
For the profile PTA 28/15 the allowed bending moment in the bolt for the channel length from > 250 mm should be reduced to 30 Nm.

Bestellbeispiel Schrauben
Order example screws

51

Art.-Nr.
Art.-No.

28

Profil
Profile

10

Gewinde
Thread

030

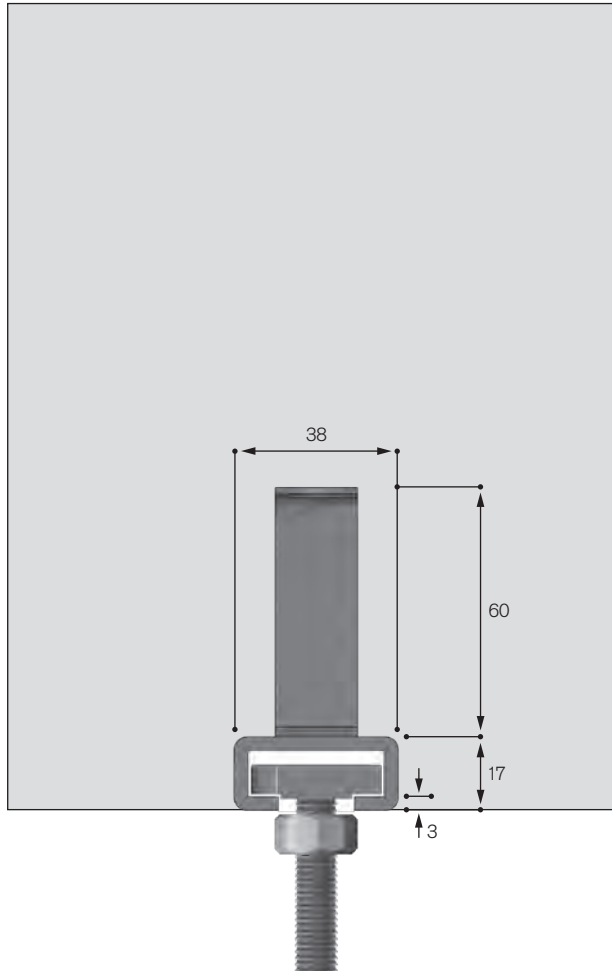
Länge
Length

zn

Material
Material

PTA ANKERSCHIENE 38/17
LASTSTUFE 4,5 + 7,0 kN*

PTA ANCHOR CHANNEL 38/17
LOAD CAPACITY 4.5 + 7.0 kN*



	Länge [mm] Length [mm]	Anker Anchors	Ankerabstand Anchor distance
Kurzstücke Short pieces	100	2	50
	150	2	100
	200	2	150
	250	2	200
	300	2	250
	350 – 550	3	≤ 250
	600 – 800	4	≤ 250
	850 – 1050	5	≤ 250
Fixlängen Cut lengths	1050 – 6000 auf Anfrage on request		≤ 250
Lagerlängen Stock lengths	6000 (-0/+ 50)	25	≤ 250

* Maximal zulässige Last gemäß bauaufsichtlicher Zulassung für Betonfestigkeitsklassen $\geq$ C20/25 (B25).
 Zweiter Wert gilt für Kurzstücke 100 – 250 mm. Zulässige Lasten für den jeweiligen Anwendungsfall siehe Seite 14.
 Maximal permissible load according to official approval. For concrete strength $\geq$ C20/25 (B25).
 The second value applies to short pieces 100 – 250 mm. Allowable loads for the respective application case see page 14.

Bestellbeispiel Ankerschienen
Order example anchor channel

50

Art.-Nr.
Art.-No.

38/17

Profil
Profile

- 0200

Länge
Length

i

Anker ausf. Material
Anchor vers. Material

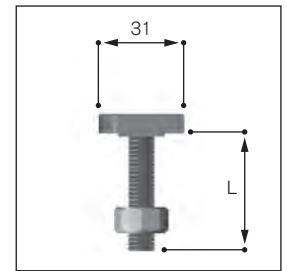
V4A



PreConTech

BVT HAMMERKOPFSCHRAUBE MIT SECHSKANTMUTTER DIN 934 FÜR PTA ANKERSCHIENE 38/17

BVT HAMMER-HEAD BOLT WITH HEXAGONAL NUT DIN 934 FOR PTA ANCHOR CHANNEL 38/17



Länge Length	M	zn	A4	M	zn	A4	M	zn	A4
20 mm	10	•	-	12	•	-	16	-	-
30 mm	10	•	•	12	•	•	16	•	•
40 mm	10	•	•	12	•	•	16	•	•
50 mm	10	•	•	12	•	•	16	•	•
60 mm	10	•	•	12	•	•	16	•	•
70 mm	10	•	-	12	•	-	16	-	-
80 mm	10	•	•	12	•	•	16	•	•
100 mm	10	•	•	12	•	•	16	•	•
125 mm	10	•	-	12	•	•	16	•	•
150 mm	10	•	-	12	•	•	16	•	•
175 mm	10	•	-	12	-	-	16	-	-
200 mm	10	•	-	12	•	•	16	•	•

zn = Festigkeitsklasse 4.6, Festigkeitsklasse 8.8 auf Anfrage
zn = Steel grade 4.6, Steel grade 8.8 on request

• = Lagerware / on stock - = auf Anfrage / on request

Zulässige Lasten, Biegemomente und Anzugsdrehmoment Allowable loads, bending moments and tightening torque

Gewinde Thread	Zulässige Lasten Allowable Loads			Zulässige Biegemomente Allowable bending moments			Anzugsdrehmoment Tightening torque [Nm]
	4.6 [kN]	A4-50 [kN]	A4-70 [kN]	4.6 [Nm]	A4-50 [Nm]	A4-70 [Nm]	
M 10	6,4	6,4	8,7	10,0	8,7	18,7	15,0
M 12	9,3	9,3	12,6	17,5	15,3	32,8 ①	25,0
M 16	17,3	17,3	23,6	44,4	38,8	83,3 ①	60,0

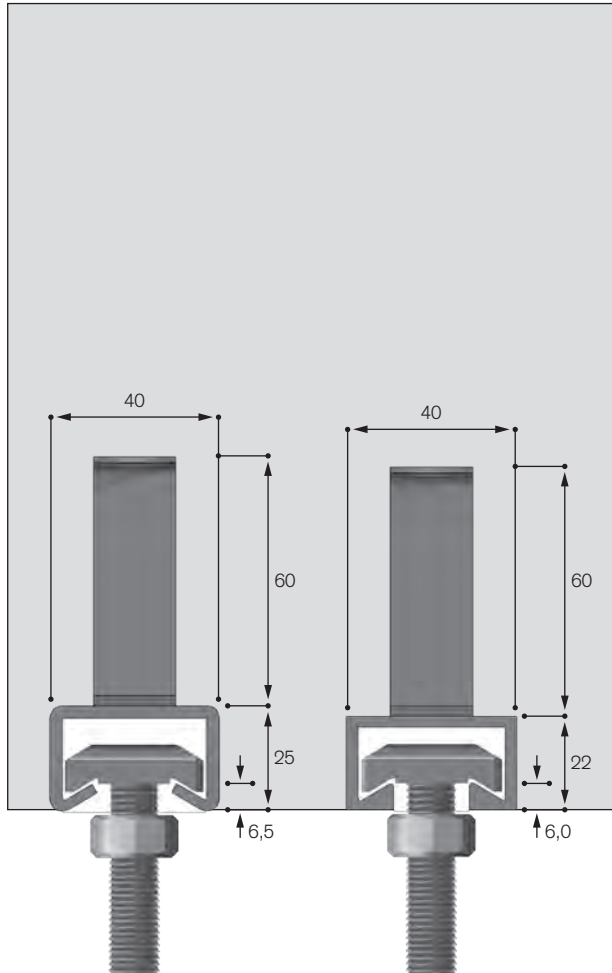
① Für das Profil PTA 38/17 ist das zulässige Schrauben-Biegemoment bei einer Schienenlänge von > 250 mm auf 72 Nm zu reduzieren.
For the profile PTA 38/17 the allowed bending moment in the bolt for the channel length from > 250 mm should be reduced to 72 Nm.

Bestellbeispiel Schrauben Order example screws

51	38	-	12	050	V4A
Art.-Nr. Art.-No.	Profil Profile	Gewinde Thread	Länge Length	Material Material	

PTA ANKERSCHIENE 40/25 + 40/22
LASTSTUFE 6,0 + 8,0 kN*

PTA ANCHOR CHANNEL 40/25 + 40/22
LOAD CAPACITY 6.0 + 8.0 kN*



	Länge [mm] Length [mm]	Anker Anchors	Ankerabstand Anchor distance
Kurzstücke Short pieces	150	2	100
	200	2	150
	250	2	200
	300	2	250
	350 – 550	3	≤ 250
	600 – 800	4	≤ 250
	850 – 1050	5	≤ 250
Fixlängen Cut lengths	1050 – 6000 auf Anfrage on request		≤ 250
Lagerlängen Stock lengths	6000 (-0/+ 50)	25	≤ 250

* Maximal zulässige Last gemäß bauaufsichtlicher Zulassung für Betonfestigkeitsklassen $\geq$ C20/25 (B25).
 Zweiter Wert gilt für Kurzstücke 150 – 250 mm. Zulässige Lasten für den jeweiligen Anwendungsfall siehe Seite 14.
 Maximal permissible load according to official approval. For concrete strength $\geq$ C20/25 (B25).
 The second value applies to short pieces 150 – 250 mm. Allowable loads for the respective application case see page 14.

Bestellbeispiel Ankerschienen
Order example anchor channel

50

Art.-Nr.
Art.-No.

40/25

Profil
Profile

0250

Länge
Length

i

Anker ausf. Material
Anchor vers. Material

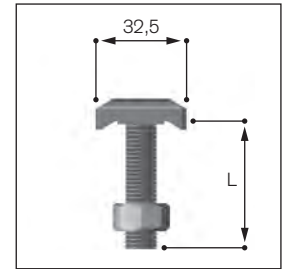
V4A



PreConTech

BVT HAKENKOPFSCHRAUBE MIT SECHSKANTMUTTER DIN 934 FÜR PTA ANKERSCHIENE 40/25 + 40/22

BVT HAMMER-HOOK BOLT WITH HEXAGONAL NUT DIN 934 FOR PTA ANCHOR CHANNEL 40/25 + 40/22



Länge Length	M	zn	A4	M	zn	A4	M	zn	A4
20 mm	10	•	-	12	•	-	16	-	-
30 mm	10	•	•	12	•	•	16	•	•
35 mm	10	-	-	12	•	-	16	-	-
40 mm	10	•	•	12	•	•	16	•	•
50 mm	10	•	•	12	•	•	16	•	•
60 mm	10	•	-	12	•	•	16	•	•
70 mm	10	•	-	12	•	-	16	•	-
80 mm	10	•	-	12	•	•	16	•	•
100 mm	10	•	-	12	•	•	16	•	•
125 mm	10	•	-	12	•	-	16	•	•
150 mm	10	•	-	12	•	•	16	•	•
175 mm	10	-	-	12	-	-	16	•	•
200 mm	10	-	-	12	•	-	16	•	•
250 mm	10	-	-	12	-	-	16	•	-
300 mm	10	-	-	12	-	-	16	•	-

zn = Festigkeitsklasse 4.6, Festigkeitsklasse 8.8 auf Anfrage
zn = Steel grade 4.6, Steel grade 8.8 on request

• = Lagerware/on stock - = auf Anfrage/on request

Zulässige Lasten, Biegemomente und Anzugsdrehmoment Allowable loads, bending moments and tightening torque

Gewinde Thread	Zulässige Lasten Allowable Loads			Zulässige Biegemomente Allowable bending moments			Anzugsdrehmoment Tightening torque
	4.6 [kN]	A4-50 [kN]	A4-70 [kN]	4.6 [Nm]	A4-50 [Nm]	A4-70 [Nm]	
M 10	6,4	6,4	8,7	10,0	8,7	18,7	15,0
M 12	9,3	9,3	12,6	17,5	15,3	32,8	25,0
M 16	17,3	17,3	23,6	44,4	38,8	83,3	60,0

Bestellbeispiel Schrauben
Order example screws

51

Art.-Nr.
Art.-No.

40

Profil
Profile

- 12

Gewinde
Thread

060

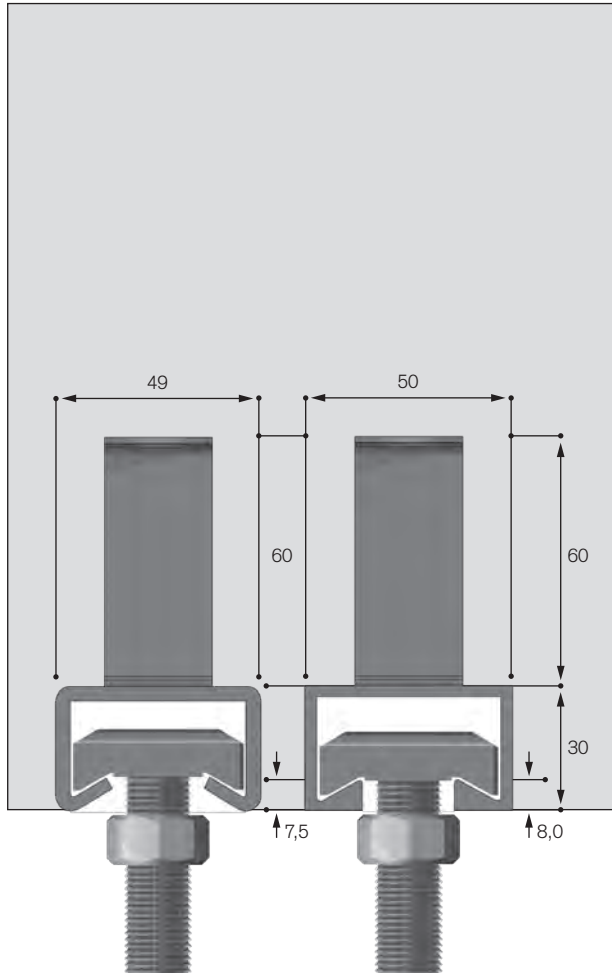
Länge
Length

zn

Material
Material

PTA ANKERSCHIENE 49/30 + 50/30
LASTSTUFE 10,0 + 12,0 kN*

PTA ANCHOR CHANNEL 49/30 + 50/30
LOAD CAPACITY 10.0 + 12.0 kN*



	Länge [mm] Length [mm]	Anker Anchors	Ankerabstand Anchor distance
Kurzstücke Short pieces	150	2	100
	200	2	150
	250	2	200
	300	2	250
	350 – 550	3	≤ 250
	600 – 800	4	≤ 250
	850 – 1050	5	≤ 250
Fixlängen Cut lengths	1050 – 6000 auf Anfrage on request		≤ 250
Lagerlängen Stock lengths	6000 (-0/+ 50)	25	≤ 250

* Maximal zulässige Last gemäß bauaufsichtlicher Zulassung für Betonfestigkeitsklassen $\geq$ C20/25 (B25).
 Zweiter Wert gilt für Kurzstücke 150 – 250 mm. Zulässige Lasten für den jeweiligen Anwendungsfall siehe Seite 14.
 Maximal permissible load according to official approval. For concrete strength $\geq$ C20/25 (B25).
 The second value applies to short pieces 150 – 250 mm. Allowable loads for the respective application case see page 14.

Bestellbeispiel Ankerschienen
Order example anchor channel

50

Art.-Nr.
Art.-No.

50/30

Profil
Profile

3050

Länge
Length

t

Anker ausf. Material
Anchor vers. Material

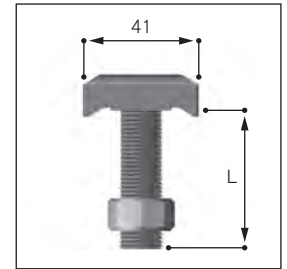
zn



PreConTech

BVT HAKENKOPFSCHRAUBE MIT SECHSKANTMUTTER DIN 934 FÜR PTA ANKERSCHIENE 49/30 + 50/30

BVT HAMMER-HOOK BOLT WITH HEXAGONAL NUT DIN 934 FOR PTA ANCHOR CHANNEL 49/30 + 50/30



Länge Length	M	zn	A4	M	zn	A4	M	zn	A4	M	zn	A4
30 mm	10	•	•	12	•	•	16	•	•	20	-	-
35 mm	10	•	-	12	•	-	16	•	-	20	•	-
40 mm	10	•	-	12	•	•	16	•	•	20	-	-
45 mm	10	•	-	12	-	-	16	-	-	20	•	•
50 mm	10	•	•	12	•	•	16	•	•	20	-	-
55 mm	10	-	-	12	-	-	16	-	-	20	•	•
60 mm	10	-	-	12	•	-	16	•	•	20	-	-
65 mm	10	-	-	12	-	-	16	-	-	20	•	-
70 mm	10	-	-	12	•	-	16	•	-	20	-	-
75 mm	10	-	-	12	-	-	16	-	-	20	•	•
80 mm	10	-	-	12	•	•	16	•	•	20	-	-
100 mm	10	-	-	12	•	•	16	•	•	20	•	•
125 mm	10	-	-	12	•	-	16	•	-	20	•	•
150 mm	10	-	-	12	•	-	16	•	•	20	•	•
175 mm	10	-	-	12	•	-	16	•	-	20	•	-
200 mm	10	-	-	12	•	-	16	•	-	20	•	-
250 mm	10	-	-	12	-	-	16	•	-	20	•	-
300 mm	10	-	-	12	-	-	16	•	-	20	•	-

zn = Festigkeitsklasse 4.6, Festigkeitsklasse 8.8 auf Anfrage
zn = Steel grade 4.6, Steel grade 8.8 on request

• = Lagerware/on stock - = auf Anfrage/on request

Zulässige Lasten, Biegemomente und Anzugsdrehmoment Allowable loads, bending moments and tightening torque

Gewinde Thread	Zulässige Lasten Allowable Loads			Zulässige Biegemomente Allowable bending moments			Anzugsdrehmoment Tightening torque
	4.6 [kN]	A4-50 [kN]	A4-70 [kN]	4.6 [Nm]	A4-50 [Nm]	A4-70 [Nm]	
M 10	6,4	6,4	8,7	10,0	8,7	18,7	15,0
M 12	9,3	9,3	12,6	17,5	15,3	32,8	25,0
M 16	17,3	17,3	23,6	44,4	38,8	83,3	60,0
M 20	27,0	27,0	36,8	86,5	75,7	162,3	120,0

Bestellbeispiel Schrauben
Order example screws

51

Art.-Nr.
Art.-No.

50

Profil
Profile

16

Gewinde
Thread

100

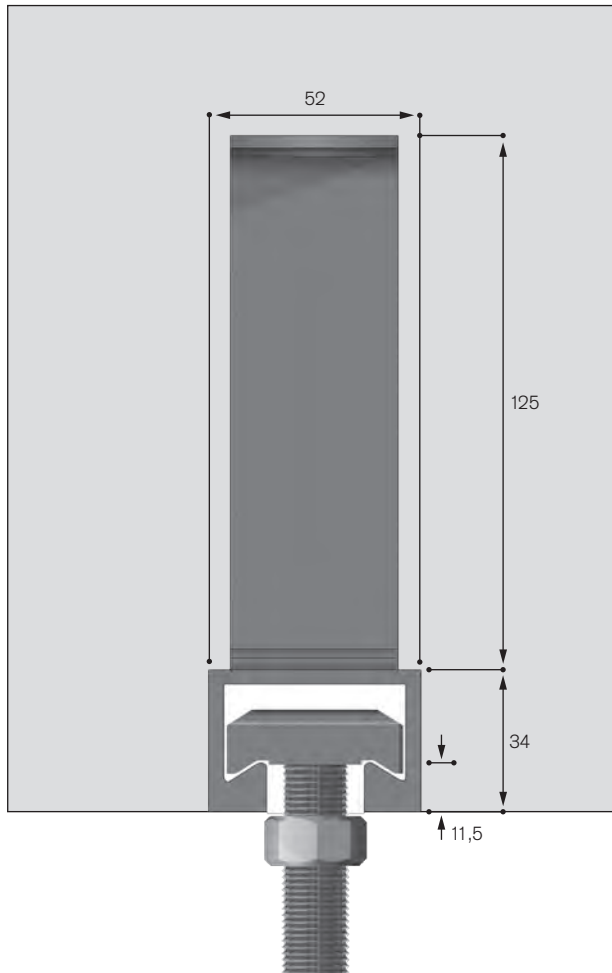
Länge
Length

zn

Material
Material

PTA ANKERSCHIENE 52/34
LASTSTUFE 22,0 kN*

PTA ANCHOR CHANNEL 52/34
LOAD CAPACITY 22.0 kN*



	Länge [mm] Length [mm]	Anker Anchors	Ankerabstand Anchor distance
Kurzstücke Short pieces	150	2	100
	200	2	150
	250	2	200
	300	2	250
	350 – 550	3	≤ 250
	600 – 800	4	≤ 250
	850 – 1050	5	≤ 250
Fixlängen Cut lengths	1050 – 6000 auf Anfrage on request		≤ 250
Lagerlängen Stock lengths	6000 (-0/+ 50)	25	≤ 250

* Maximal zulässige Last gemäß bauaufsichtlicher Zulassung für Betonfestigkeitsklassen $\geq$ C20/25 (B25).
 Zulässige Lasten für den jeweiligen Anwendungsfall siehe Seite 14.
 Maximal permissible load according to official approval. For concrete strength $\geq$ C20/25 (B25).
 Allowable loads for the respective application case see page 14.

Bestellbeispiel Ankerschienen
Order example anchor channel

50

Art.-Nr.
Art.-No.

52/34

Profil
Profile

6000

Länge
Length

t

Anker ausf. Material
Anchor vers. Material

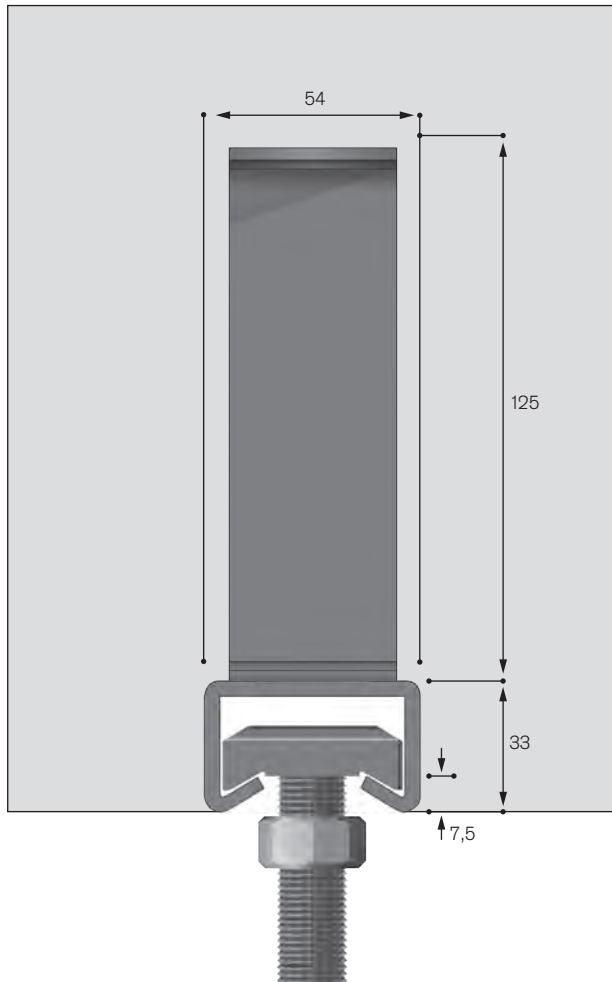
V4A



PreConTech

PTA ANKERSCHIENE 54/33
LASTSTUFE 22,0 kN*

PTA ANCHOR CHANNEL 54/33
LOAD CAPACITY 22.0 kN*



	Länge [mm] Length [mm]	Anker Anchors	Ankerabstand Anchor distance
Kurzstücke Short pieces	150	2	100
	200	2	150
	250	2	200
	300	2	250
	350 – 550	3	≤ 250
	600 – 800	4	≤ 250
	850 – 1050	5	≤ 250
Fixlängen Cut lengths	1050 – 6000 auf Anfrage on request		≤ 250
Lagerlängen Stock lengths	6000 (-0/+ 50)	25	≤ 250

* Maximal zulässige Last gemäß bauaufsichtlicher Zulassung für Betonfestigkeitsklassen $\geq$ C20/25 (B25).
 Zulässige Lasten für den jeweiligen Anwendungsfall siehe Seite 14.
 Maximal permissible load according to official approval. For concrete strength $\geq$ C20/25 (B25).
 Allowable loads for the respective application case see page 14.

Bestellbeispiel Ankerschienen
Order example anchor channel

50

Art.-Nr.
Art.-No.

54/33

Profil
Profile

6000

Länge
Length

t

Anker ausf. Material
Anchor vers. Material

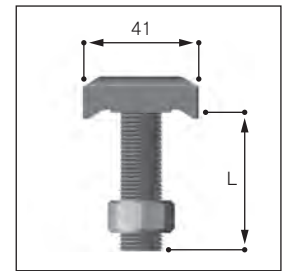
V4A



PreConTech

BVT HAKENKOPFSCHRAUBE MIT SECHSKANTMUTTER DIN 934 FÜR PTA ANKERSCHIENE 52/34 + 54/33

BVT HAMMER-HOOK BOLT WITH HEXAGONAL NUT DIN 934 FOR PTA ANCHOR CHANNEL 52/34 + 54/33



Länge Length	M	zn	A4	M	zn	A4	M	zn	A4	M	zn	A4
30 mm	10	•	•	12	•	•	16	•	•	20	-	-
35 mm	10	•	-	12	•	-	16	•	-	20	•	-
40 mm	10	•	-	12	•	•	16	•	•	20	-	-
45 mm	10	•	-	12	-	-	16	-	-	20	•	•
50 mm	10	•	•	12	•	•	16	•	•	20	-	-
55 mm	10	-	-	12	-	-	16	-	-	20	•	•
60 mm	10	-	-	12	•	-	16	•	•	20	-	-
65 mm	10	-	-	12	-	-	16	-	-	20	•	-
70 mm	10	-	-	12	•	-	16	•	-	20	-	-
75 mm	10	-	-	12	-	-	16	-	-	20	•	•
80 mm	10	-	-	12	•	•	16	•	•	20	-	-
100 mm	10	-	-	12	•	•	16	•	•	20	•	•
125 mm	10	-	-	12	•	-	16	•	-	20	•	•
150 mm	10	-	-	12	•	-	16	•	•	20	•	•
175 mm	10	-	-	12	•	-	16	•	-	20	•	-
200 mm	10	-	-	12	•	-	16	•	-	20	•	-
250 mm	10	-	-	12	-	-	16	•	-	20	•	-
300 mm	10	-	-	12	-	-	16	•	-	20	•	-

zn = Festigkeitsklasse 4.6, Festigkeitsklasse 8.8 auf Anfrage
zn = Steel grade 4.6, Steel grade 8.8 on request

• = Lagerware/on stock - = auf Anfrage/on request

Zulässige Lasten, Biegemomente und Anzugsdrehmoment Allowable loads, bending moments and tightening torque

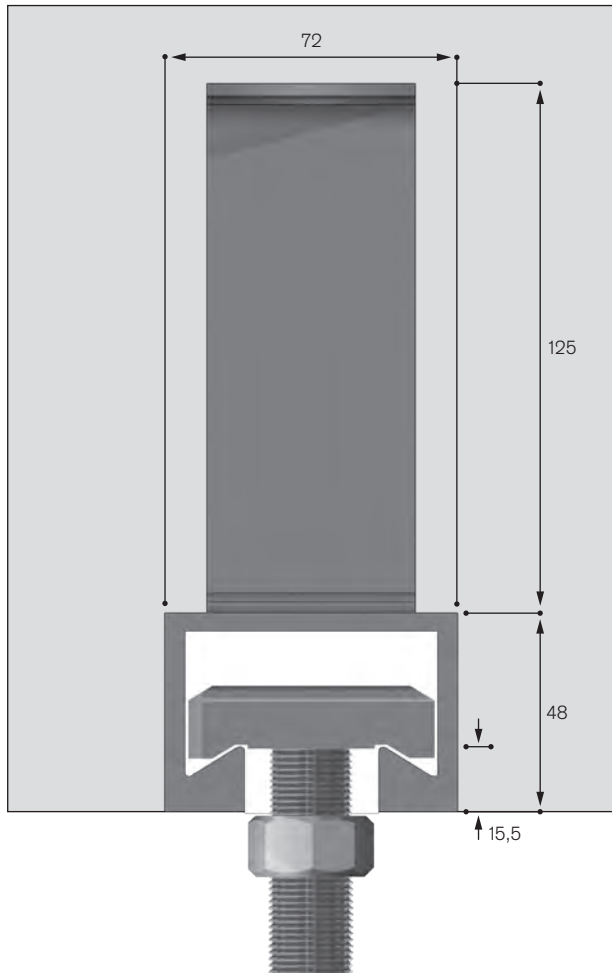
Gewinde Thread	Zulässige Lasten Allowable Loads			Zulässige Biegemomente Allowable bending moments			Anzugsdrehmoment Tightening torque
	4.6 [kN]	A4-50 [kN]	A4-70 [kN]	4.6 [Nm]	A4-50 [Nm]	A4-70 [Nm]	
M 10	6,4	6,4	8,7	10,0	8,7	18,7	15,0
M 12	9,3	9,3	12,6	17,5	15,3	32,8	25,0
M 16	17,3	17,3	23,6	44,4	38,8	83,3	60,0
M 20	27,0	27,0	36,8	86,5	75,7	162,3	120,0

Bestellbeispiel Schrauben
Order example screws

51	52	-	20	125	zn
Art.-Nr. Art.-No.	Profil Profile		Gewinde Thread	Länge Length	Material Material

PTA ANKERSCHIENE 72/48
LASTSTUFE 27,0 kN*

PTA ANCHOR CHANNEL 72/48
LOAD CAPACITY 27.0 kN*



	Länge [mm] Length [mm]	Anker Anchors	Ankerabstand Anchor distance
Kurzstücke Short pieces	150	2	100
	200	2	150
	250	2	200
	300	2	250
	350 – 550	3	≤ 250
	600 – 800	4	≤ 250
	850 – 1050	5	≤ 250
Fixlängen Cut lengths	1050 – 6000 auf Anfrage on request		≤ 250
Lagerlängen Stock lengths	6000 (-0/+ 50)	25	≤ 250

* Maximal zulässige Last gemäß bauaufsichtlicher Zulassung für Betonfestigkeitsklassen $\geq$ C20/25 (B25).
 Zulässige Lasten für den jeweiligen Anwendungsfall siehe Seite 14.
 Maximal permissible load according to official approval. For concrete strength $\geq$ C20/25 (B25).
 Allowable loads for the respective application case see page 14.

Bestellbeispiel Ankerschienen
Order example anchor channel

50

Art.-Nr.
Art.-No.

72/48

Profil
Profile

- 0300

Länge
Length

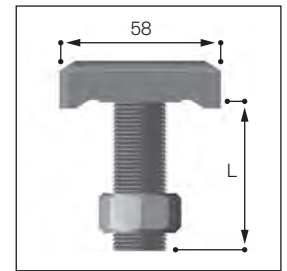
t

Anker ausf. Material
Anchor vers. Material

zn

BVT HAKENKOPFSCHRAUBE MIT SECHSKANTMUTTER DIN 934 FÜR PTA ANKERSCHIENE 72/48

BVT HAMMER-HOOK BOLT WITH HEXAGONAL NUT DIN 934 FOR PTA ANCHOR CHANNEL 72/48



Länge Length	M	zn	A4	M	zn	A4	M	zn	A4	M	zn	A4
50 mm	20	•	-	24	•	-	27	-	-	30	-	-
75 mm	20	•	-	24	•	-	27	•	-	30	•	-
100 mm	20	•	-	24	•	-	27	•	-	30	•	-
150 mm	20	•	-	24	•	-	27	-	-	30	•	-
200 mm	20	•	-	24	•	-	27	-	-	30	•	-

zn = Festigkeitsklasse 4.6
zn = Steel grade 4.6

• = Lagerware/on stock - = auf Anfrage/on request

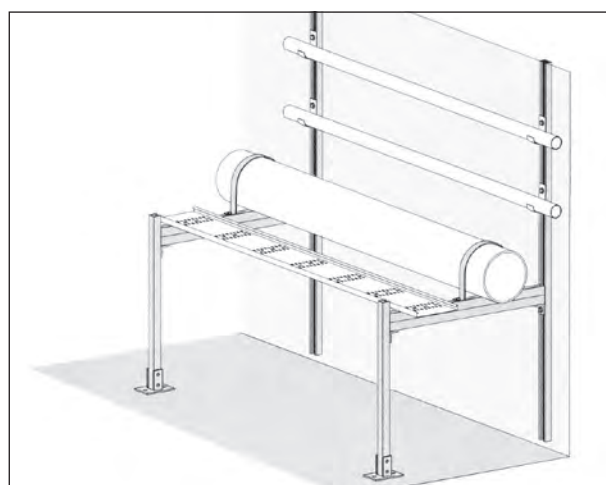
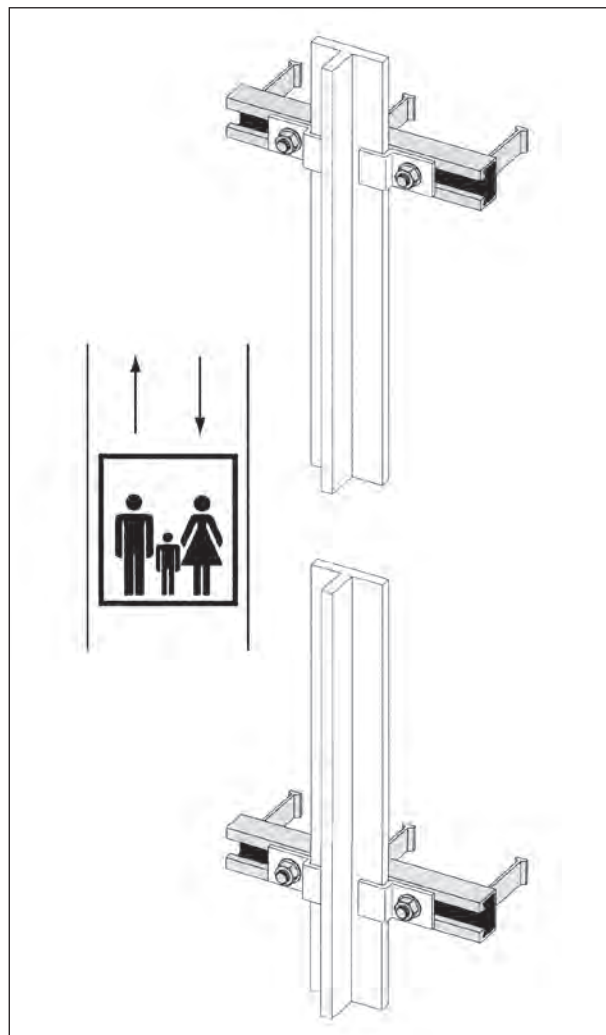
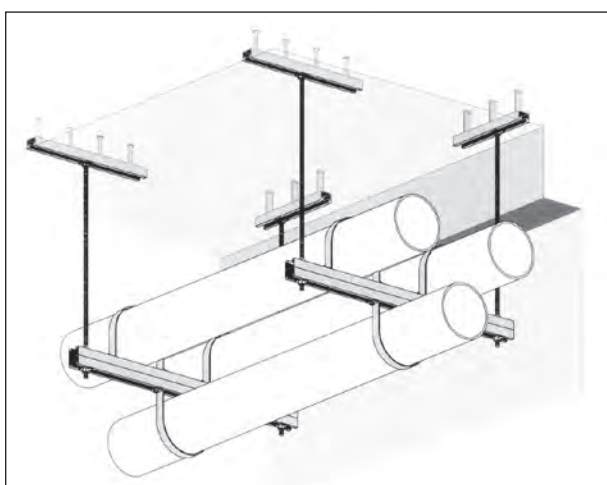
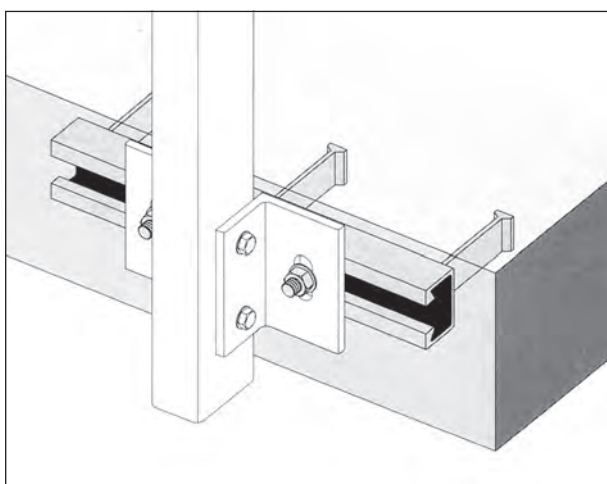
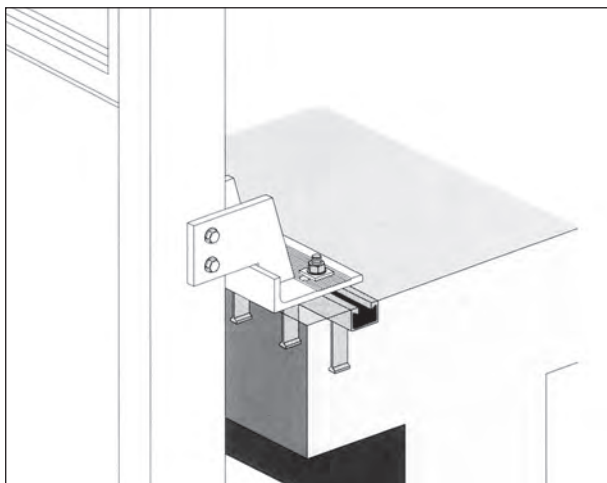
Zulässige Lasten, Biegemomente und Anzugsdrehmoment Allowable loads, bending moments and tightening torque

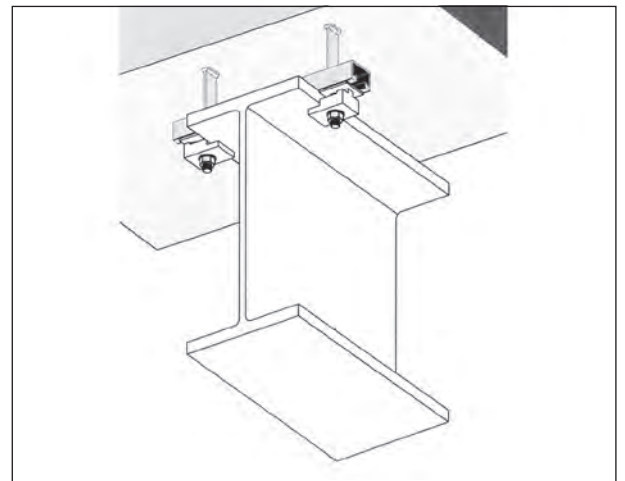
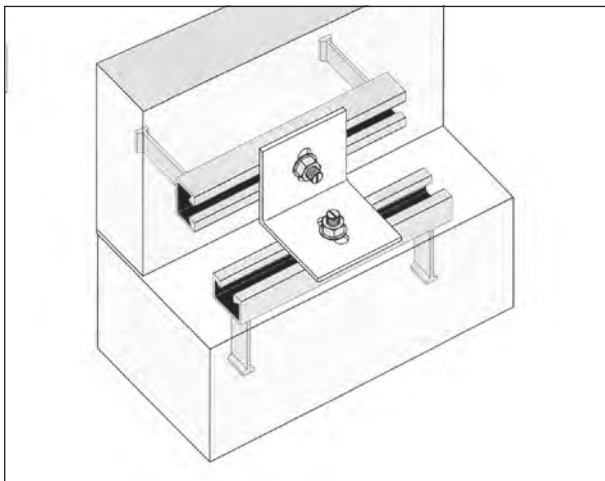
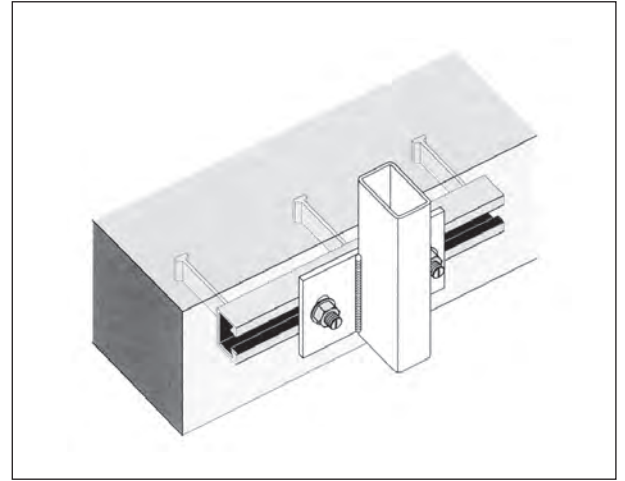
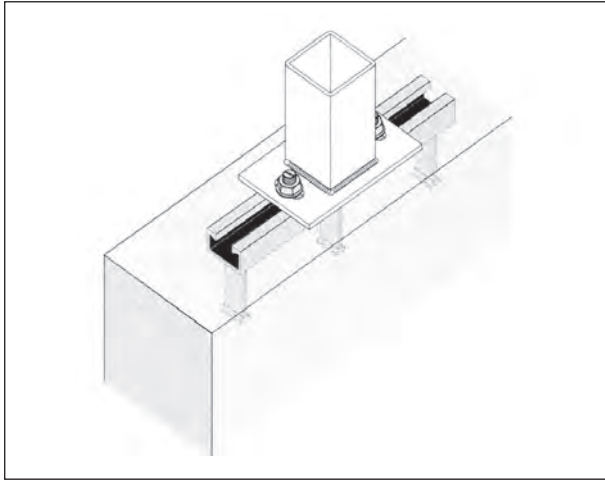
Gewinde Thread	Zulässige Lasten Allowable Loads			Zulässige Biegemomente Allowable bending moments			Anzugsdrehmoment Tightening torque [Nm]
	4.6 [kN]	A4-50 [kN]	A4-70 [kN]	4.6 [Nm]	A4-50 [Nm]	A4-70 [Nm]	
M 20	27,0	-	-	86,5	-	-	120,0
M 24	38,8	-	-	149,7	-	-	200,0
M 27	50,5	-	-	221,9	-	-	300,0
M 30	61,7	-	-	299,9	-	-	400,0

Bestellbeispiel Schrauben
Order example screws

51	72	-	24	150	zn
Art.-Nr. Art.-No.	Profil Profile		Gewinde Thread	Länge Length	Material Material

ANWENDUNGSBEISPIELE APPLICATION EXAMPLES





PRECONTECH PTU TRAPEZBLECHBEFESTIGUNGSSCHIENEN

ZUGELASSEN VOM DEUTSCHEN INSTITUT FÜR BAUTECHNIK (DIBt)
ZULASSUNGSNR. Z-21.4-1865

PRECONTECH PTU CAST-IN CHANNELS

APPROVED BY THE GERMAN CONSTRUCTION MATERIALS SUPERVISORY BOARD (DIBt)
APPROVAL NO. Z-21.4-1865

PTU Trapezblechbefestigungsschienen eignen sich ideal zur Befestigung von Stahltrapezblechen an Beton.

Ihre Vorteile:

- Einfache und damit kostengünstige Montage
- Sichere Verankerung
- Oberflächenbündige Montage der Stahltrapezbleche

Wir bieten Ihnen unsere zugelassenen Trapezblechfestigungsschienen

- PTU Typ A
- PTU Typ B

sowie weiterhin die Variante

- Typ C mit Schlitz und justierfähigen Ankern (Vorteilhaft bei konzentrierter Bewehrung)

PTU Cast-in channels are perfectly suitable for the attachment of profiled metal sheeting to concrete.

Your advantages:

- Simple and therewith reasonable assembly
- Safe anchorage
- Surface-concise assembly of the profiled metal sheeting

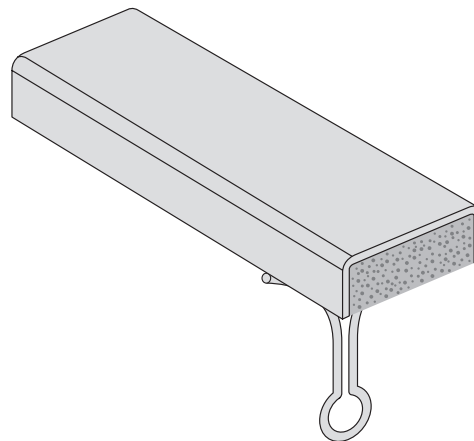
We offer you our officially approved Cast-in channels

- PTU type A
- PTU type B

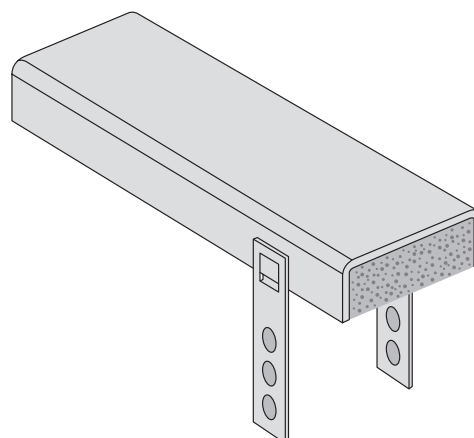
As well as the following version

- Type C with slot and adjustable anchors (advantageous when using concentrated reinforcement)

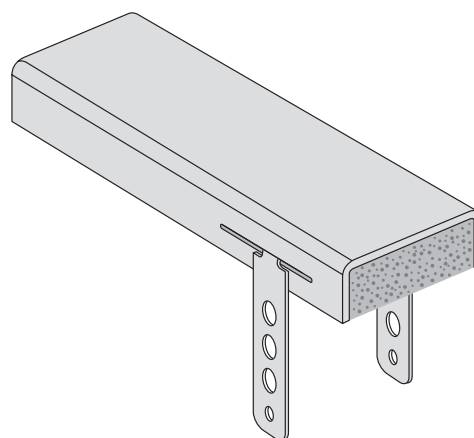
PTU Trapezblechbefestigungsschiene Typ A
PTU Cast-in channel type A



PTU Trapezblechbefestigungsschiene Typ B
PTU Cast-in channel type B



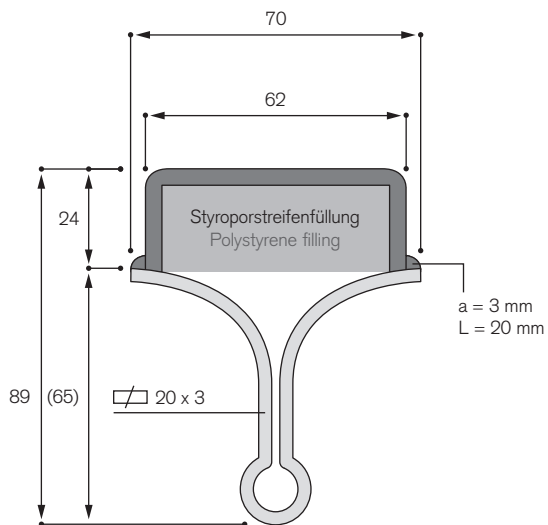
Trapezblechbefestigungsschiene Typ C
Cast-in channel type C



PTU TRAPEZBLECHBEFESTIGUNGSSCHIENE 60/24/3 LASTSTUFE 3,5 KN PRO ANKER

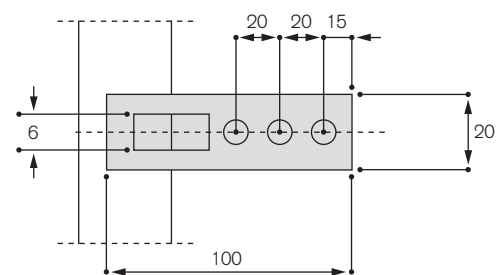
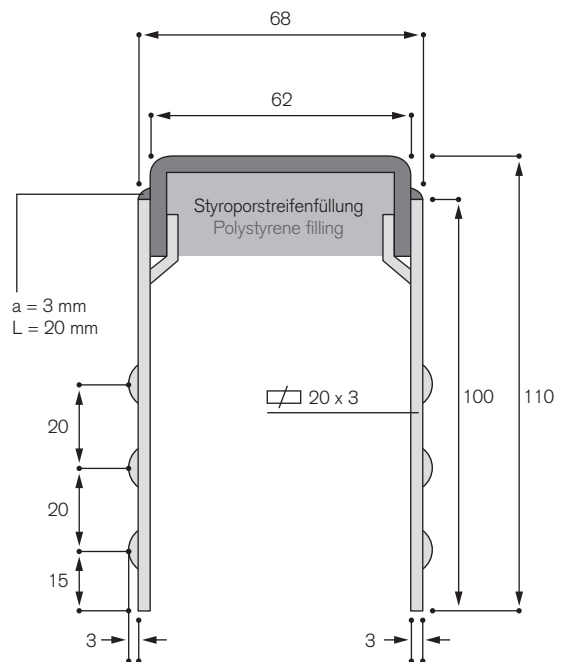
PTU CAST-IN CHANNEL 60/24/3 LOAD CAPACITY 3.5 KN PER ANCHOR

Typ A
Type A

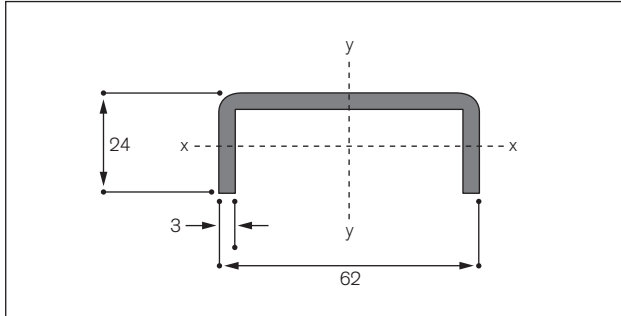


Maße in mm
Dimensions in mm

Typ B
Type B



Querschnittswerte Cross section properties



$$\begin{aligned} A &= 3.08 \text{ cm}^2 \\ I_x &= 1.55 \text{ cm}^4 \\ W_{xo} &= 2.41 \text{ cm}^3 \\ W_{xu} &= 0.88 \text{ cm}^3 \end{aligned}$$

Aufkleber Sticker

PreConTech PTU 60/24/3

(Stahl S235JR bzw. W1.4571/1.4401 Dicke 3 mm)
zum Anschrauben von Trapezblechen mit
Sechskantblech- oder Bohrschrauben

Zur Kennzeichnung wird auf dem Rücken jeder Schiene ein Aufkleber angebracht.
As a marking, a sticker is attached to the back of each channel.

Werkstoff 1.0038 nach DIN EN 10025-2:2005-04 für Schiene und Anker
Alternativ: W. 1.4571/14401 nach DIN EN 10088:2005-09 bzw. Zulassungsbescheid Nr. Z-30.3-6

Korrosionsschutz:

- Feuerverzinkung mit $\geq 50 \mu\text{m}$ Zinkauflage
- Nichtrostender Stahl W. 1.4571/1.4401

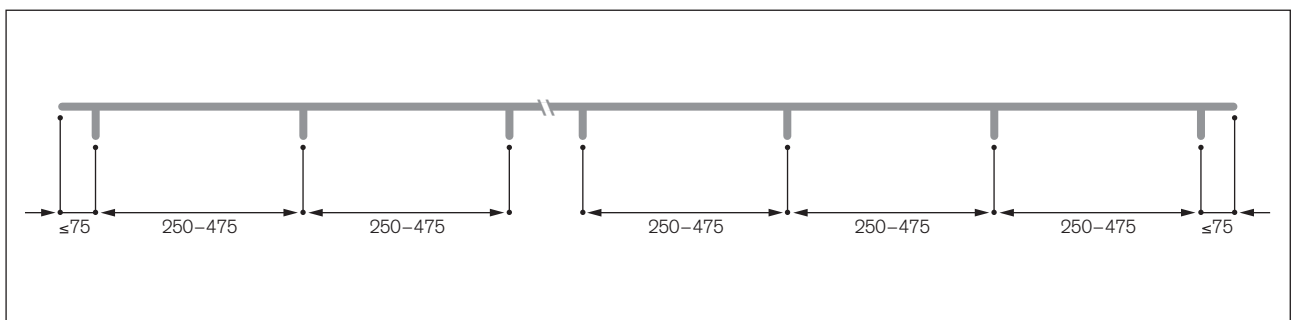
Material 1.0038 acc. to DIN EN 10025-2:2005-04 for channel and anchor

Alternatively: W. 1.4571/14401 acc. to DIN EN 10088:2005-09 respectively certificate no. Z-30.3-6

Corrosion prevention:

- Hot dip galvanized with $\geq 50 \mu\text{m}$ zinc coating
- Stainless steel W. 1.4571/1.4401

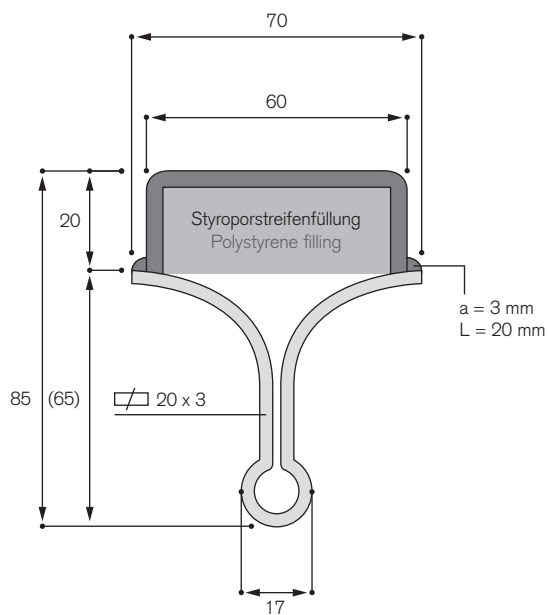
Ankerabstände Anchor spacing



PTU TRAPEZBLECHBEFESTIGUNGSSCHIENE 60/20/6 LASTSTUFE 3,5 kN PRO ANKER

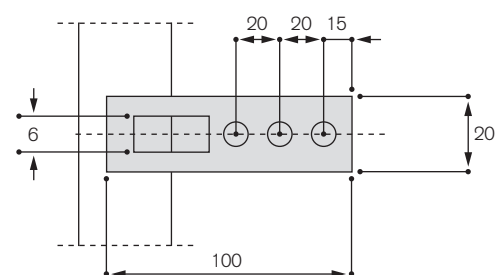
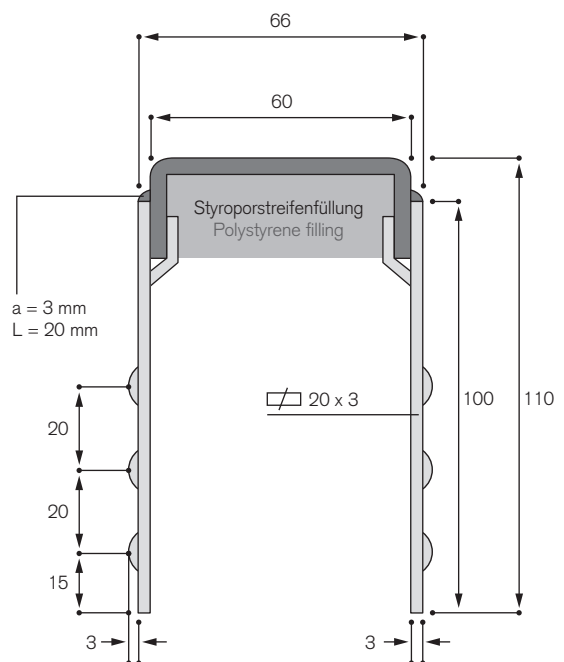
PTU CAST-IN CHANNEL 60/20/6 LOAD CAPACITY 3.5 kN PER ANCHOR

Typ A
Type A

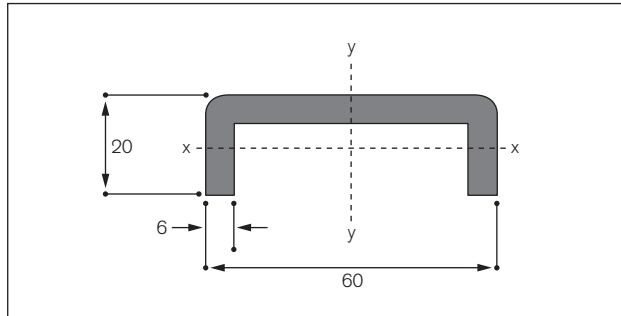


Maße in mm
Dimensions in mm

Typ B
Type B



Querschnittswerte Cross section properties



$$\begin{aligned} A &= 5.54 \text{ cm}^2 \\ I_x &= 2.51 \text{ cm}^4 \\ W_{xo} &= 3.20 \text{ cm}^3 \\ W_{xu} &= 1.51 \text{ cm}^3 \end{aligned}$$

Aufkleber Sticker

PreConTech PTU 60/20/6

(Stahl S235JR bzw. W1.4571/1.4401 Dicke 6 mm)
zum Befestigen von Trapezblechen mit
Setzbolzen oder gewindefurchenden Schrauben

Zur Kennzeichnung wird auf dem Rücken jeder Schiene ein Aufkleber angebracht.
As a marking, a sticker is attached to the back of each channel.

Werkstoff 1.0038 nach DIN EN 10025-2:2005-04 für Schiene und Anker
Alternativ: W. 1.4571/14401 nach DIN EN 10088:2005-09 bzw. Zulassungsbescheid Nr. Z-30.3-6

Korrosionsschutz:

- Feuerverzinkung mit $\geq 50 \mu\text{m}$ Zinkauflage
- Nichtrostender Stahl W. 1.4571/1.4401

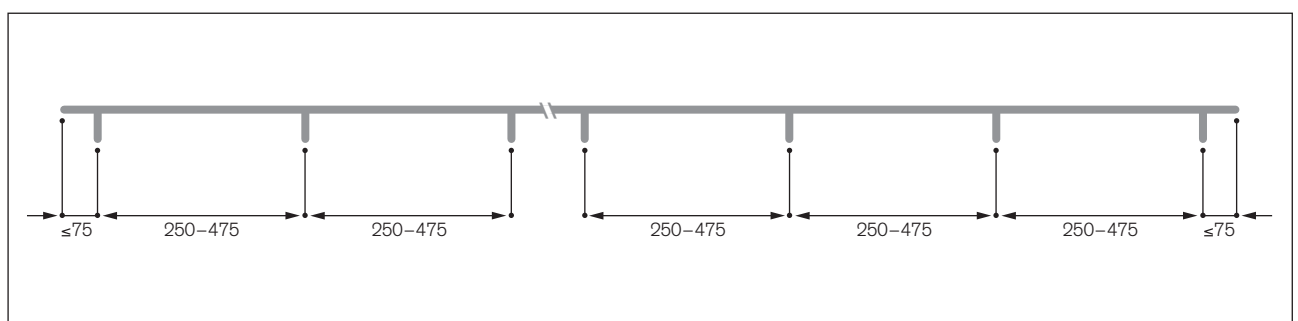
Material 1.0038 acc. to DIN EN 10025-2:2005-04 for channel and anchor

Alternatively: W. 1.4571/14401 acc. to DIN EN 10088:2005-09 respectively certificate no. Z-30.3-6

Corrosion prevention:

- Hot dip galvanized with $\geq 50 \mu\text{m}$ zinc coating
- Stainless steel W. 1.4571/1.4401

Ankerabstände Anchor spacing

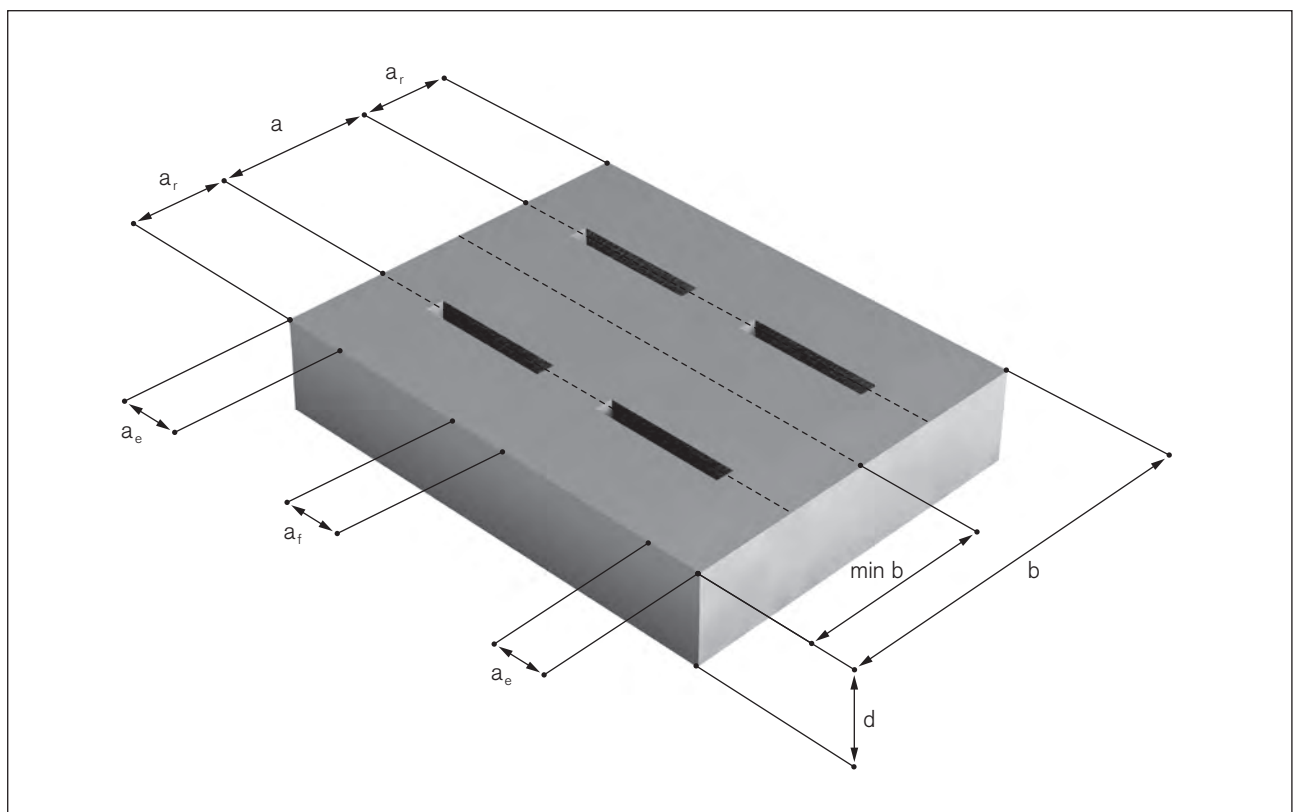


Zulässige Last zul. F je Einzelanker (Typ A) bzw. Ankerpaar (Typ B) für die Beanspruchungsrichtung zentrischer Zug
Permissible load perm. F single anchor (type A) or anchor pair (type B) for centric pull

PTU 60/24/3 PTU 60/20/6	zul. F / perm. F [kN]
Typ A / type A	3,5
Typ B / type B	3,5

Mindestabstände (Achs-, Rand- und Eckabstände) und Mindestbauteilabmessungen
Minimal distances (axis-, edge and corner distances) and minimal construction unit dimensions

PTU 60/24/3 PTU 60/20/6	a ^① [cm]	a _r ^② [cm]	a _e ^③ [cm]	a _f ^④ [cm]	d ^⑤ [cm]	b ^⑥ [cm]
Typ A / type A	20	12	2	2	8,5 + c _{nom}	20
Typ B / type B	20	10	2	2	11,0 + c _{nom}	20



- ① Werden die Schienen so angeordnet, dass die Anker benachbarter Schienen um mind. 25 cm gegeneinander versetzt sind, so darf der Achsabstand a auf 8 cm reduziert werden.
If the channels are arranged so that the anchors of neighboring channels are mutually shifted around by min. 25 cm, the axis distance a may be reduced to 8 cm.

- ② Bei nicht voller Ausnutzung der zul. Ankerkraft darf der Randabstand a , reduziert werden auf:
If the admitted anchor force is not fully utilized the edge distance a , may be reduced to:

$$a_{r1} = \frac{F}{3,5} \times a, \geq 5 \text{ cm}$$

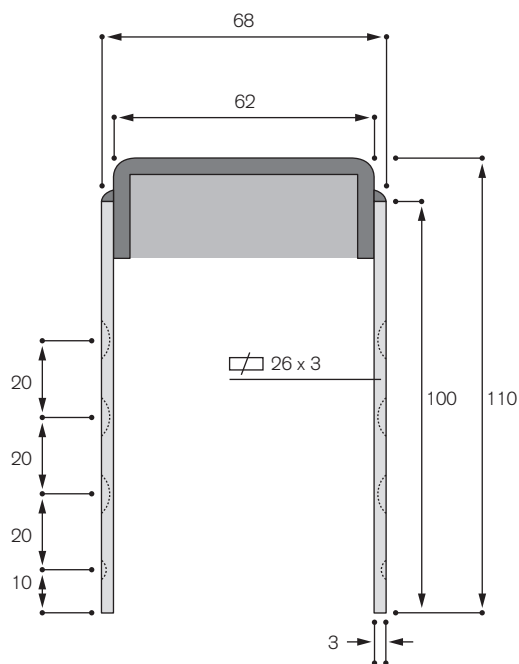
F = vorh. Ankerkraft ohne Teilsicherheitsbeiwert in [kN]
 F = prev. anchor force without partial safety coefficient in [kN]

- ③ Bei voller Auslastung der Ankerkraft muß der letzte Anker mindestens 9 cm vom Rand entfernt sein.
With full extent of utilization of the anchor force the last anchor must be at least 9 cm away from the edge.
- ④ Bei voller Auslastung der Ankerkraft müssen die beiden »Endanker« wenigstens einen gegenseitigen Abstand von 15 cm haben.
With full extent of utilization of the anchor force both »final anchors« must have a mutual distance of at least 15 cm.
- ⑤ Ergibt sich aus der Geometrie der Anker und der erforderlichen Betondeckung c_{nom} nach DIN 1045-1:2001-07.
Arises from the geometry of the anchor and the necessary concrete cover c_{nom} acc. to DIN 1045-1:2001-07.
- ⑥ Mindestbauteilbreite bei Anordnung einer Schiene.
Minimal construction unit width with arrangement of a channel.

TRAPEZBLECHBEFESTIGUNGSSCHIENE 62/24/3 LASTSTUFE 3,5 KN PRO ANKER

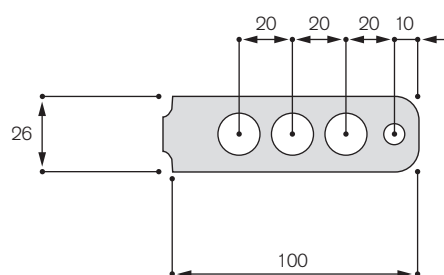
CAST-IN CHANNEL 62/24/3 LOAD CAPACITY 3.5 KN PER ANCHOR

Typ C
Type C



Mit Schlitz und justierfähigen Ankern
(Vorteilhaft bei konzentrierter Bewehrung)

With slot and adjustable anchors
(advantageous when using concentrated reinforcement)



Maße in mm
Dimensions in mm

ALLGEMEINE BAUAUFSICHTLICHE ZULASSUNG
GENERAL CERTIFICATE OF APPROVAL



TA-Danmark A/S
Göteborg Plads 1
DK-2150 Nordhavn
Tel. +45 72 24 59 00
Fax +45 72 24 59 04
Internet www.etadanmark.dk

Authorised and notified according
to Article 29 of the Regulation (EU)
No 305/2011 of the European
Parliament and of the Council of 9
March 2011



European Technical Assessment ETA-18/0711 of 2018/12/04

I General Part

Technical Assessment Body issuing the ETA and designated according to Article 66 of the Regulation (EU) No 305/2011: ETA-Danmark A/S

**Trade name of the
construction product:**

PreConTech Ankerschiene PTA 40/22
PreConTech cast-in anchor channel PTA 40/22

**Product family to which the
above construction product
belongs:**

Anchor Channels

Manufacturer:

PreConTech e.K
Beckerweg 6
D-65468 Trebur
Tel.: +49 6147 913 920
Fax: +49 6147 913 929
www.precontech.net

Manufacturing plant:

PreConTech e.K
Beckerweg 6
D-65468 Trebur

**This European Technical
Assessment contains:**

27 pages including 19 annexes which form an
integral part of the document

**This European Technical
Assessment is issued in
accordance with Regulation
(EU) No 305/2011, based on:**

European Assessment Document (EAD)
330008-02-0601.

This version replaces:

-

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II SPECIFIC PART OF THE EUROPEAN TECHNICAL ASSESSMENT

1 Technical description of product and intended use

Technical description of the product

The PreConTech cast-in anchor channel 40/22 is a hot-rolled anchor channel with the dimensions 40/22 for anchorage in cracked and non-cracked normal weight concrete C12/15 to C90/105 in accordance to European Assessment Document (EAD) 330008-02-0601, February 2016.

The anchor channel consists of a U-shaped unalloyed hot-rolled channel, as a minimum two steel I-anchors welded on the back of the channel and hook-head channel bolts. The anchor channel was cast in a concrete specimen up to its full depth. The hook-head channel bolt of the size M16 was hooked in the channel.

Detailed specifications for identification and performance criteria for fire safety regarding the construction products are given in ANNEXES.

2 Specification of the intended use in accordance with the applicable EAD

The anchor channel is intended to be used for anchorage under static or quasi-static loading and fatigue cyclic load in reinforced or unreinforced normal weight concrete of strength classes C12/15 at minimum and C90/105 at maximum. Hot dip galvanized steel is used for every section of the channel. The channel bolt consists of material class 8.8.

The tensile strength of the channel has been tested according to EAD, the results are shown in table 1.

Table 1: Strength properties of the channel

Channel 40/22 (S235JR)	
Tensile strength f_{uk} [N/mm ²]	Yield strength f_{yk} [N/mm ²]
580	450

The tensile strength of the anchor has been tested according to EAD, the results are shown in table 2.

Table 2: Strength properties of the anchor

Anchor (S235JR)	
Tensile strength f_{uk} [N/mm ²]	Yield strength f_{yk} [N/mm ²]
580	-

The tensile strength of the channel bolt has been tested according to the EAD, the results are shown in table 3

Table 3: Strength properties of the channel bolt

Channel bolt PTA M16 (8.8)	
Tensile strength f_{uk} [N/mm ²]	Yield strength f_{yk} [N/mm ²]
800	640

The provisions made in this European Technical Assessment are based on an assumed intended working life of the anchor channels of 50 years, provided the manufacturers conditions for the packaging, transport, storage, installation, use, maintenance and repair are met.

The indications given on the working life cannot be interpreted as a guarantee given by the producer or Assessment Body, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

3 Performance of the product and references to the methods used for its assessment*

Characteristic	Assessment of characteristic																																																																								
3.1 Mechanical resistance and stability (BWR1)																																																																									
Characteristic resistance for tension under static and quasi-static loading	$N_{Rk,s,a}$ 36,8 kN																																																																								
Characteristic resistance for shear and combined tension and shear under static and quasi-static loading	Failure of the connection between anchor and channel																																																																								
	<table><tr><th>Nr.</th><th>Profil-Nr.</th><th>N_u^t [kN]</th><th>Failure mode</th><th colspan="2">Statistic</th></tr><tr><td>1</td><td>E 5-6</td><td>23,30</td><td>SRS</td><td>ξ [kN]</td><td>27,7</td></tr><tr><td>2</td><td>G 1-6</td><td>28,40</td><td>SRS</td><td>σ_x</td><td>3,09</td></tr><tr><td>3</td><td>E 2-7</td><td>26,30</td><td>SRS</td><td>v</td><td>11,15%</td></tr><tr><td>4</td><td>E 4-7</td><td>32,30</td><td>SRS</td><td>$N_{Rk,s,c,test}$ [kN]</td><td>18,7</td></tr><tr><td>5</td><td>-7</td><td>28,10</td><td>SRS</td><td>$N_{Rk,s,c}$ [kN]</td><td>15,4</td></tr><tr><td>6</td><td>E1-6</td><td>30,00</td><td>SRS</td><td>f_{uk} [N/mm²]</td><td>580</td></tr><tr><td>7</td><td>F4-7</td><td>25,30</td><td>SRS</td><td>$f_{u,test}$ [N/mm²]</td><td>621</td></tr><tr><td>8</td><td></td><td></td><td></td><td>$t_{ch,nom}$ [mm]</td><td>2,5</td></tr><tr><td>9</td><td></td><td></td><td></td><td>$t_{ch,test}$ [mm]</td><td>2,85</td></tr><tr><td>10</td><td></td><td></td><td></td><td>n =</td><td>7</td></tr><tr><td>11</td><td></td><td></td><td></td><td>k =</td><td>2,893</td></tr></table>	Nr.	Profil-Nr.	N_u^t [kN]	Failure mode	Statistic		1	E 5-6	23,30	SRS	ξ [kN]	27,7	2	G 1-6	28,40	SRS	σ_x	3,09	3	E 2-7	26,30	SRS	v	11,15%	4	E 4-7	32,30	SRS	$N_{Rk,s,c,test}$ [kN]	18,7	5	-7	28,10	SRS	$N_{Rk,s,c}$ [kN]	15,4	6	E1-6	30,00	SRS	f_{uk} [N/mm ²]	580	7	F4-7	25,30	SRS	$f_{u,test}$ [N/mm ²]	621	8				$t_{ch,nom}$ [mm]	2,5	9				$t_{ch,test}$ [mm]	2,85	10				n =	7	11				k =	2,893
	Nr.	Profil-Nr.	N_u^t [kN]	Failure mode	Statistic																																																																				
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Characteristic resistance for tension under fatigue loading	<table><tr><th colspan="2">Anchor channel</th><th>PTA 40/22</th></tr><tr><th>Steel failure</th><th>n</th><th>$\Delta N_{Rk,s,0,n}$ Pos. 2 [kN]</th></tr><tr><td rowspan="14">Characteristic resistances under fatigue tension load without static preload</td><td>≤ 1</td><td>6,77</td></tr><tr><td>$\leq 10^1$</td><td>6,61</td></tr><tr><td>$\leq 10^2$</td><td>6,03</td></tr><tr><td>$\leq 3 \times 10^2$</td><td>5,60</td></tr><tr><td>$\leq 10^3$</td><td>5,04</td></tr><tr><td>$\leq 3 \times 10^3$</td><td>4,47</td></tr><tr><td>$\leq 10^4$</td><td>3,83</td></tr><tr><td>$\leq 3 \times 10^4$</td><td>3,26</td></tr><tr><td>$\leq 10^5$</td><td>2,69</td></tr><tr><td>$\leq 3 \times 10^5$</td><td>2,25</td></tr><tr><td>$\leq 10^6$</td><td>1,85</td></tr><tr><td>$\leq 10^7$</td><td>1,36</td></tr><tr><td>$> 10^7$</td><td>1,13</td></tr></table>	Anchor channel		PTA 40/22	Steel failure	n	$\Delta N_{Rk,s,0,n}$ Pos. 2 [kN]	Characteristic resistances under fatigue tension load without static preload	≤ 1	6,77	$\leq 10^1$	6,61	$\leq 10^2$	6,03	$\leq 3 \times 10^2$	5,60	$\leq 10^3$	5,04	$\leq 3 \times 10^3$	4,47	$\leq 10^4$	3,83	$\leq 3 \times 10^4$	3,26	$\leq 10^5$	2,69	$\leq 3 \times 10^5$	2,25	$\leq 10^6$	1,85	$\leq 10^7$	1,36	$> 10^7$	1,13																																							
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$> 10^7$		1,13																																																																							

Steel failure of the channel bolt under tension load	$N_{Rk,S}$: 121 kN
Steel failure by exceeding the bending strength of the channel under tension load	$M_{Rk,s,flex}$: 1276 Nm
Characteristic resistance	Pull-out failure for C20/25: $N_{Rk,p}$ (Uncracked concrete): 28,9 kN $N_{Rk,p}$ (Cracked concrete): 20,6 kN
Concrete cone failure	$k_{cr,N}$: 7,9 N^{0,5}/mm^{0,5} $k_{ucr,N}$: 11,2 N^{0,5}/mm^{0,5}

Characteristic	Assessment of characteristic
Concrete splitting failure due to installation	$C_{cr,sp}$: 234 mm $S_{cr,sp}$: 468 mm
Characteristic resistance for shear under static and quasi-static loading	No tests are required, since the characteristic resistance for steel failure is calculated with $\alpha_s = 0,5$ for strength class 8.8.
Steel failure of channel bolt	$V_{Rk,s}$: 62,8 kN
Local steel failure of channel lips, steel failure of connection anchor/channel of anchor under shear load.	According to EAD the tests may be omitted, if $V_{Rk,s,l}^0 \leq N_{Rk,s,l}^0$ and $V_{Rk,s,c} \leq N_{Rk,s,c}$ and $V_{Rk,s,a} \leq N_{Rk,s,a}$ is accepted. $V_{Rk,s,a} = V_{Rk,s,c} = V_{Rk,s,l} = N_{Rk,s,c} = 15,4$ kN
Steel failure by bending of the channel bolt under shear load with lever arm	According to EAD the tests may be omitted, if $V_{Rk,s,l}^0 \leq N_{Rk,s,l}^0$ and $V_{Rk,s,c} \leq N_{Rk,s,c}$ and $V_{Rk,s,a} \leq N_{Rk,s,a}$ or $k_{13} = k_{14} = 1$ are accepted, no test methods are currently specified.
Concrete pry-out failure under shear load	$K_8 = 2,0$ for anchor channels with $h_{ef} = 78$ mm ≥ 60 mm.
Concrete edge failure under shear load	No tests are required, since $k_{cr,V} = 4,5$ [$N^{0,5}/mm^{0,33}$] and $k_{ucr,V} = 6,3$ [$N^{0,5}/mm^{0,33}$] and the conditions $h_{ch}/h_{ef} = 0,28 < 0,4$; $b_{ch}/h_{ef} = 0,51 < 0,7$ are fulfilled.
Characteristic resistance for tension under static and fatigue cyclic loading	Steel failure: $\Delta NR_{k,s,0;\infty}$ 1,13 kN Concrete cone failure: $\eta_{c,fat}$ 0,667
3.2 Safety in case of fire (BWR2)	
Reaction to fire	Class A1 according to EC Decision 96/603/EC
Resistance to fire	No Performance Assessed for the individual products

*) See additional information in section 3.6 – 3.7.

3.6 Methods of verification

The product is fully covered by EAD 330008-02-0601, February 2016. According to the Regulation (EU) No 305/2011.

3.7 General aspects related to the fitness for use of the product

The European Technical Assessment is issued for the product based on agreed data/information, deposited with ETA-Danmark, which identifies the product that has been assessed and judged. Changes to the product or production process, which could result in this deposited data/information being incorrect, should be notified to ETA-Danmark before the changes are introduced. ETA-Danmark will decide if such changes affect the ETA and consequently the validity of the CE marking based on the ETA and if so whether further assessment or alterations to the ETA, shall be necessary.

The PreConTech cast-in anchor channel 40/22 are manufactured in accordance with the provisions of this European Technical Assessment using the manufacturing processes as identified in the inspection of the plant by the notified inspection body and laid down in the technical documentation.

4 Attestation and verification of constancy of performance (AVCP)

4.1 AVCP system

According to the decision 1999/454/EC of the European Commission, as amended, the system(s) of assessment and verification of constancy of performance is system 1 (see Annex V to Regulation (EU) No 305/2011).

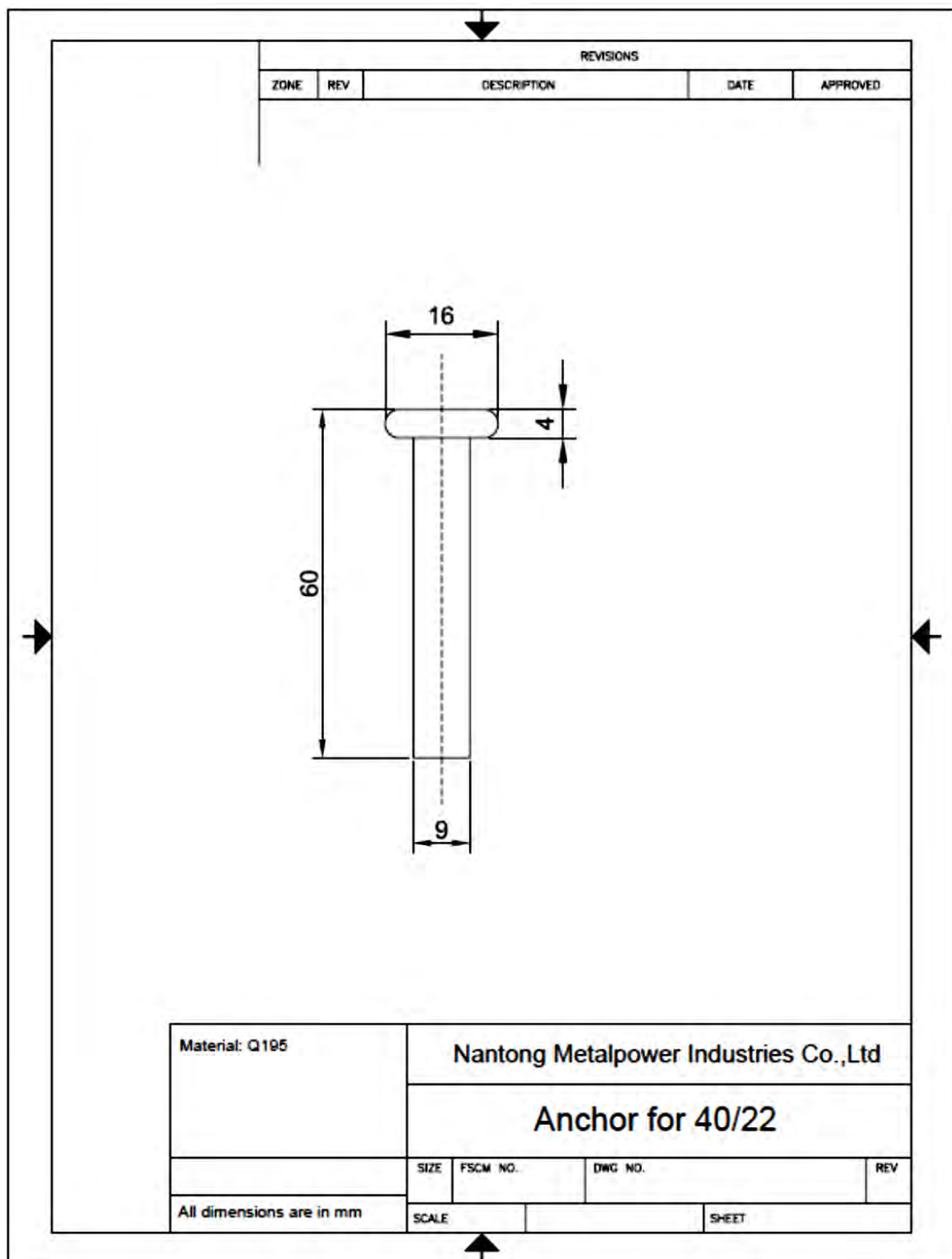
5 Technical details necessary for the implementation of the AVCP system, as foreseen in the applicable EAD

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at ETA-Danmark prior to CE marking

Issued in Copenhagen on 2018-12-04 by



Thomas Bruun
Managing Director, ETA-Danmark



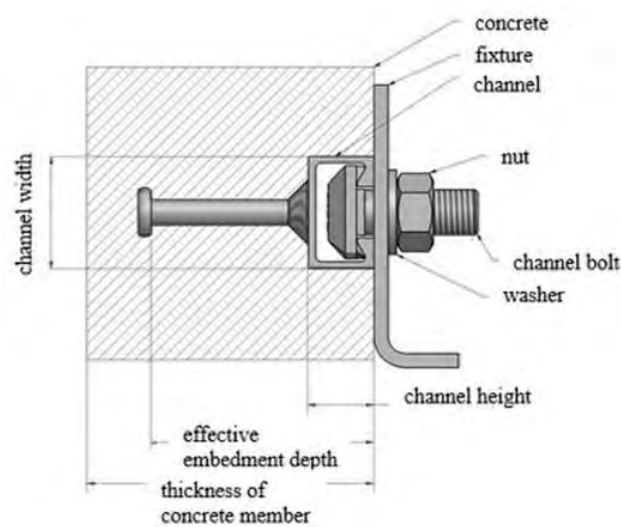
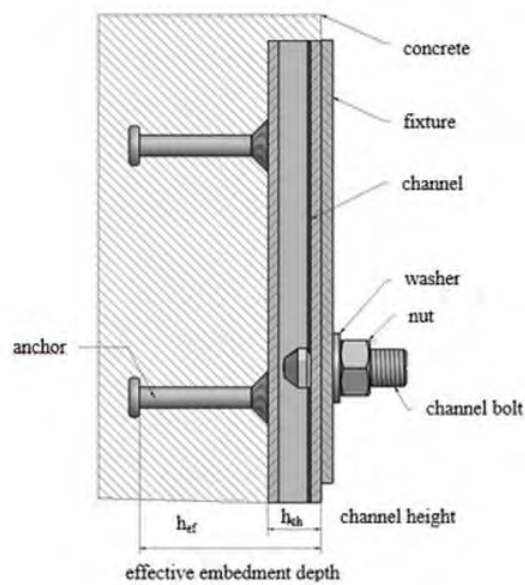
PreConTech cast-in anchor channel PTA 40/22

Illustration of the Anchor

Annex A1

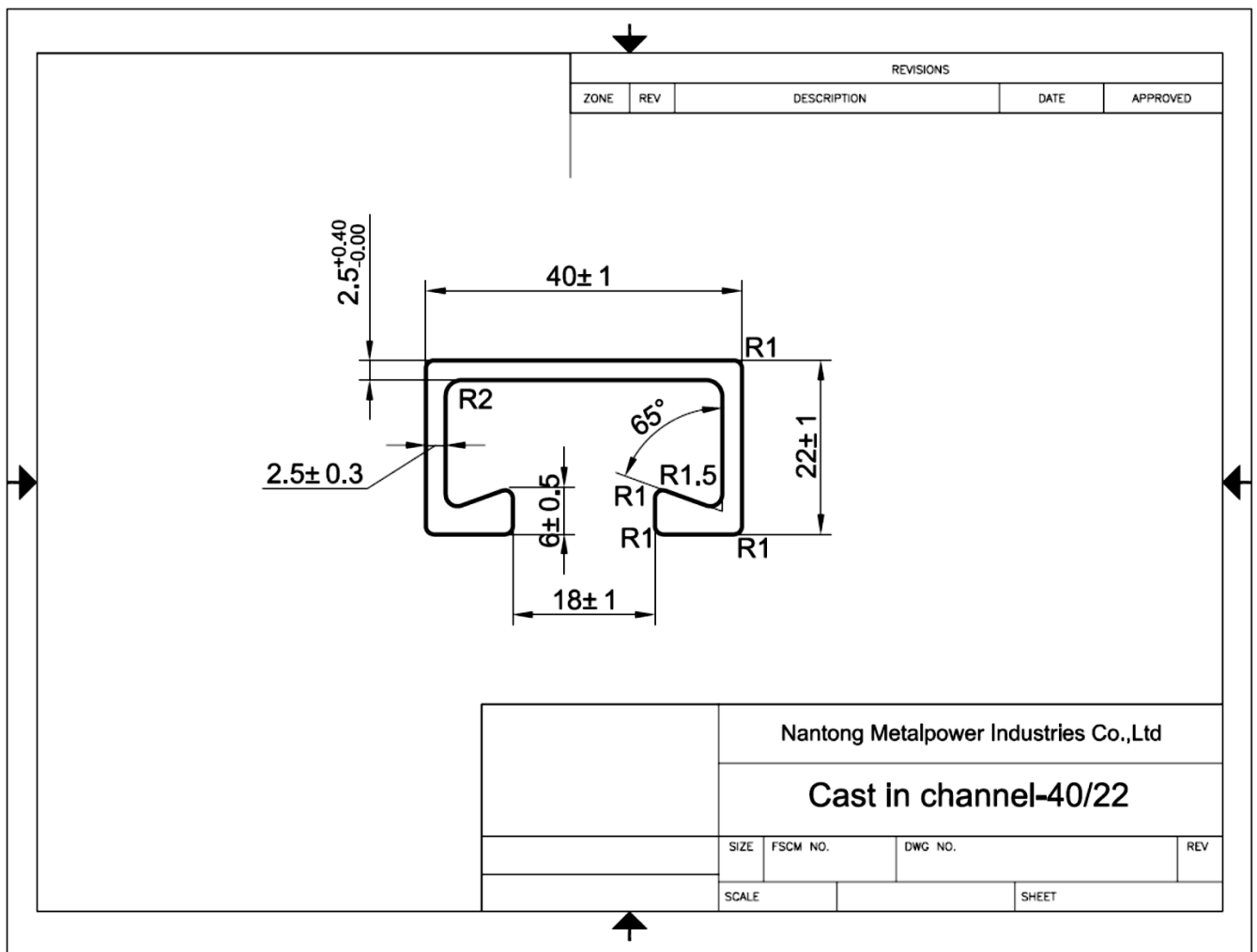
Anchor spacing $s_{min}=s_{max}$ [mm]	Minimum edge distance c_{min} [mm]	Minimum member thickness h_{min} [mm]	$s_{min,cbo}=5d$ [mm]	Torque T_{inst} general [Nm]	Torque T_{inst} steel-steel contact [Nm]
250	80	125	80	25	180

Installation parameters



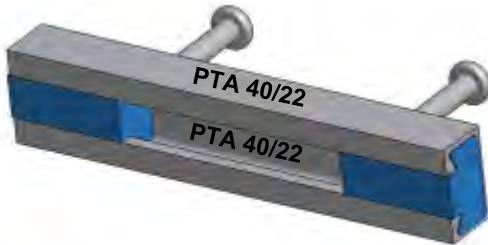
PreConTech cast-in anchor channel PTA 40/22	Annex A2
Installation conditions	

Anchor diameter d_a	Anchor head diameter d_h	Anchor head height t_h	Project load bearing area of the head of the fastener A_h	Channel height h_{ch}	Channel width b_{ch}
[mm]	[mm]	[mm]	[mm ²]	[mm]	[mm]
9	16	4	137,4	22	40



PreConTech cast-in anchor channel PTA 40/22	Annex A3
Geometric parameters of the channel	

Marking of the PreConTech anchor channel – PTA 40/22



PTA = Identifying mark of the producer
PreConTech

40/22 = size

Close to the anchor a nail hole is positioned

Stumped on the inside the channel and on channel web

Marking of the PreConTech channel bolt – BVT M16-8.8



BVT = Identifying mark of the producer
PreConTech

M16 = size

8.8 = strength grade

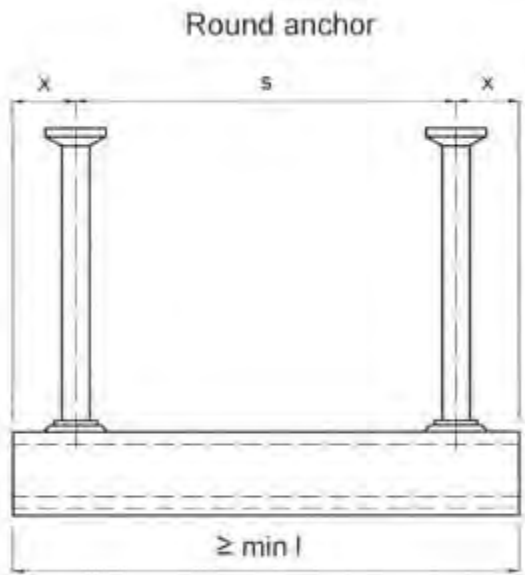
PreConTech cast-in anchor channel PTA 40/22

Annex A4

Marking and materials

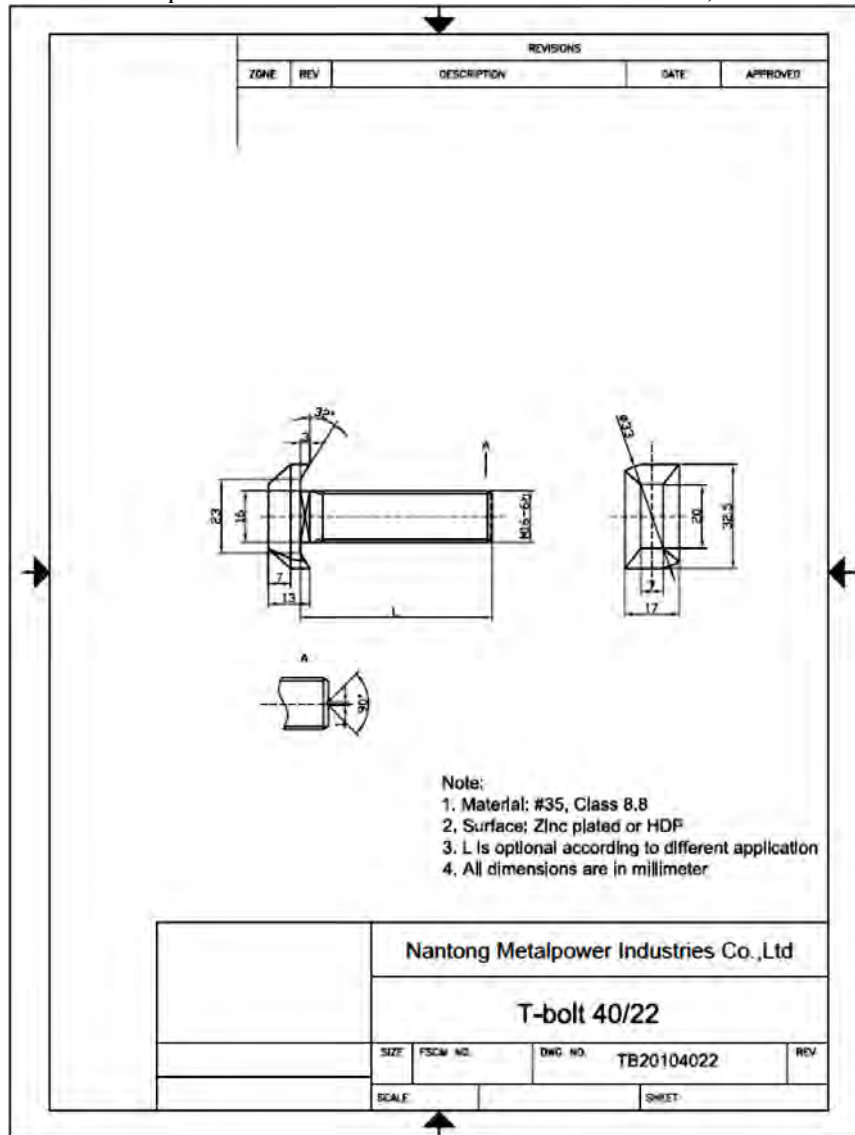
Item no.	Intended use		
	Specification	Dry internal conditions	Internal conditions with usual humidity
		Anchor channels may only be used in structures subject to dry internal conditions (e.g. accommodations, bureaus, schools, hospitals, shops except internal conditions with usual humidity according to following column.	Anchor channels may also be used in structures subject to internal conditions with usual humidity (e.g. kitchen bath and laundry in residential buildings, except permanently damp conditions and applications under water)
1	Channel profile	Steel 1.0038; 1.0044 EN 10025 Hot dip galv $\geq 50 \mu\text{m}$ Stainless steel 1.4301 EN 10088	Steel 1.0038; 1.0044 EN 10025 Hot dip galv $\geq 50 \mu\text{m}$
2	Anchor	Hot dip galv. Steel acc. to EN ISO 1461 $\geq 50 \mu\text{m}$	Hot dip galv. Steel acc. to EN ISO 1461 $\geq 50 \mu\text{m}$
3	Channel bolt thread and shaft acc. EN ISO 4018	Steel strength class 8.8 acc. to EN ISO 898-1 hot dip galv acc. to EN ISO 10684 $\geq 40 \mu\text{m}$	Steel strength class 8.8 acc. to EN ISO 898-1 hot dip galv acc. to EN ISO 10684 $\geq 40 \mu\text{m}$
4	Washer, EN ISO 7089 and EN 7093-1	Steel acc. to EN 10025 hot dip galv acc. to EN ISO 4042 $\geq 5 \mu\text{m}$	Steel acc. to EN 10025 hot dip galv acc. to EN ISO 4042 $\geq 5 \mu\text{m}$
5	Hexagon nuts EN ISO 4032	Steel strength class 8.8 hot dip galv acc. to EN ISO 4042	Steel strength class 8.8 hot dip galv acc. to EN ISO 4042

PreConTech cast-in anchor channel PTA 40/22	Annex A5
Materials and intended use	



Anchor channel	Anchor spacing		End spacing x	Min. channel length
	s_{min}	s_{max}	Round anchor	Round anchor
	[mm]			
40/22	250	250	25	300

PreConTech cast-in anchor channel PTA 40/22	Annex A6
Anchor positioning, channel length	



Dimensions of the channel bolt:

Channel Bolt		40/22
Anchor channel		40/22
$\varnothing$	[mm]	16
b1	[mm]	17.0
b2	[mm]	32.5
k	[mm]	13.0
Length l	[mm]	40-200

Strength grade:

Channel bolt	Steel
Strength grade	8.8
f_{uk} [N/mm ²]	800
f_{yk} [N/mm ²]	640
Finish	Hot dip galvanised

PreConTech cast-in anchor channel PTA 40/22	Annex A7
Channel bolts, dimensions and strength grade	

Specifications of intended use

Anchor channel and channel bolts subject to:

- Static and quasi-static loads in tension and shear perpendicular to the longitudinal of axis of the channel

Base materials:

- Reinforced or unreinforced normal weight concrete according to EN 206-1
- Strength classes C12/15 to C90/105 according to EN 206-1
- Cracked or uncracked concrete

Use conditions (Environmental conditions):

- Structures subject to environmental conditions according to Annex A5

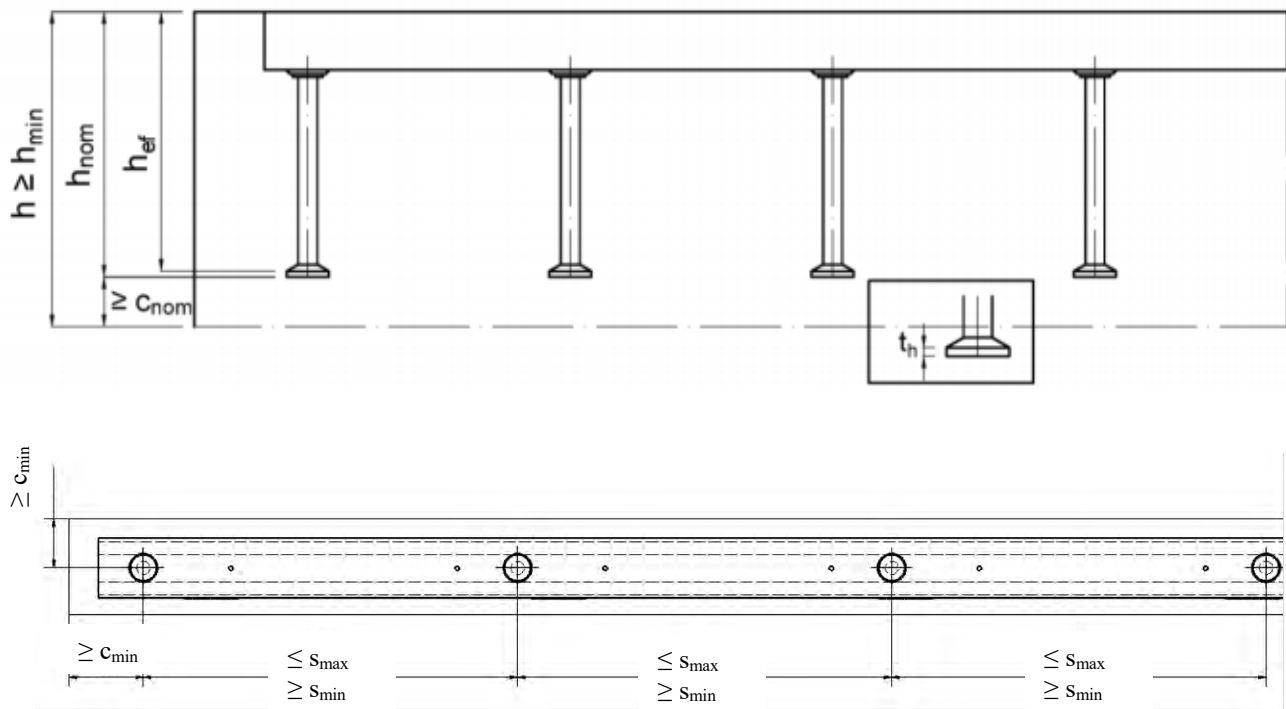
Design:

- Anchor channel are designed under the responsibility of an engineer experienced in anchorages and concrete work
- Verifiable calculation notes and drawings are prepared considering the loads to be anchored. The position of the anchor channel and channel bolts are indicated on the design drawings (e.g. position of the anchor channel relative to the reinforcement or to the supports)
- For static and quasi-static loading as well as fire exposure the anchor channels are designed in accordance with EOTA TR 047 “Design of Anchor Channels” or EN 1992-4.
- The characteristic resistances are calculated with the minimum effective embedment depth.

Installation:

- The installation of anchor channels is carried out by appropriately qualified personnel under the supervision of the person responsible for the technical matters on site.
- Use of the anchor channels only as supplied by the manufacturer – without any manipulations, repositioning or exchanging of the channel components.
- Cutting of anchor channels is allowed only if pieces according to Annex A6 are generated including end spacing and minimum channel length and only to be used in dry internal conditions.
- Installation in accordance with the manufacturer’s installation instructions are given in Annex B5.
- The anchor channels are fixed on the formwork or reinforcement such that no movement of the channels will occur during the time of laying the reinforcement and of placing and compacting the concrete.
- The concrete under the head of the anchors are properly compacted. The channels are protected from penetration of concrete into the internal space of the channels.
- Washer may be chosen according to Annex A5 and provided separately by the user.
- Orientating the channel bolts (groove according to Annex B5) rectangular to the channel axis.
- The setting torques given in Annex B3 must be applied and must not be exceeded.

PreConTech cast-in anchor channel PTA 40/22	Annex B1
Specifications	



Anchor channel			Hot Rolled Profile
			40/22
Min. embedment depth	min h_{ef}	[mm]	78
Min. edge distance	c_{min}		80
Min. member thickness	h_{min}		$h_{ef} + t_h + C_{nom}^{2)}$ 125

1) s_{min} , s_{max} acc.to Annex A6

2) $c_{nom} \geq 40$ mm acc. to EN 1992-1-1

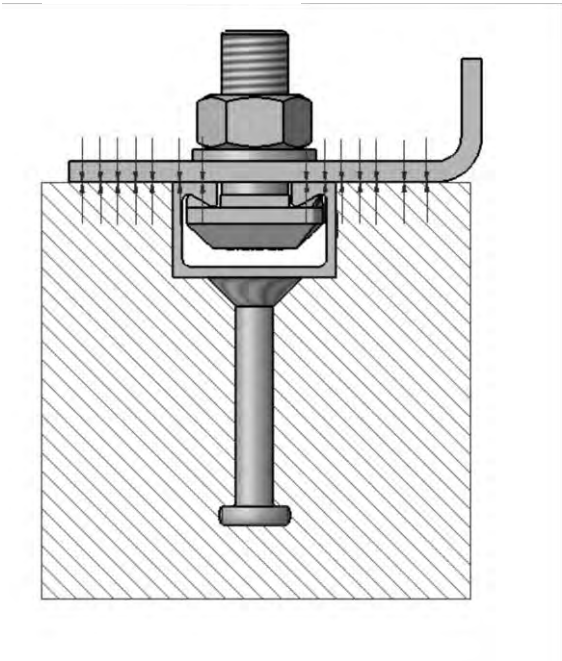
PreConTech cast-in anchor channel PTA 40/22	Annex B2
Installation parameters of anchor channels	

Channel bolt for cold profiles	Channel bolt Ø	Min. spacing $s_{min'cbo}^{4)}$ of the channel bolts	Installation Torque $T_{inst}^{3)}$	
			General ²⁾	Steel-Steel contact ²⁾
40/22			8.8 ¹⁾	8.8 ¹⁾
	[mm]	[mm]	[Nm]	
	16	80	25	180

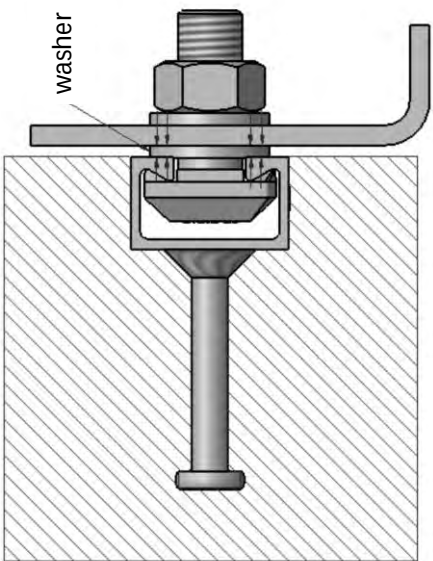
- 1) Material according to Annex A5
- 2) See Annex B4
- 3) T_{inst} must not be exceeded
- 4) See Annex C1

PreConTech cast-in anchor channel PTA 40/22	Annex B3
Installation parameter of channel bolts	

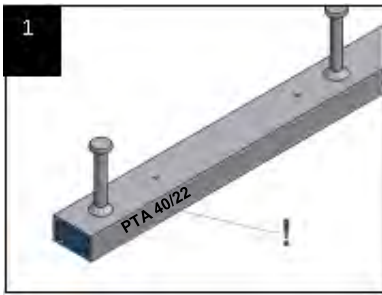
General:



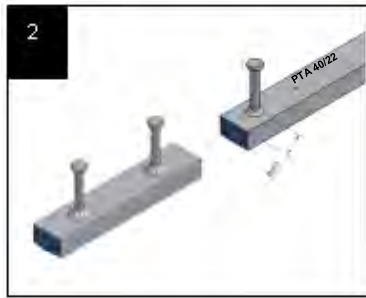
Steel-Steel Contact:



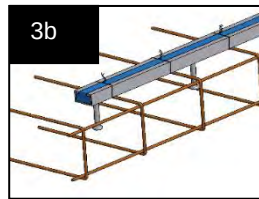
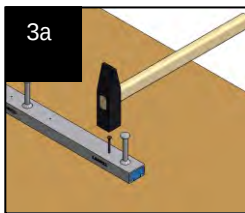
PreConTech cast-in anchor channel PTA 40/22	Annex B4
Positions of the fixture	



Selection of anchor channel in accordance with the planning document.

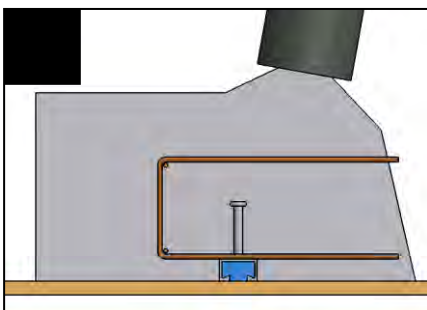


If cutting anchor channel follow min. end spacing acc. annex A6

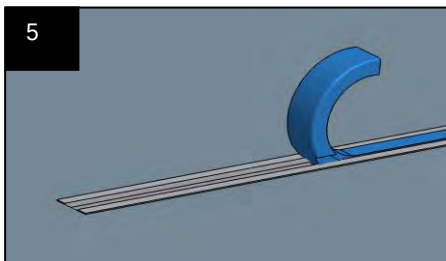


Placing channel into formwork as follows:

- Wood formwork: Fixing with nails (Fig. 3a)
- Fixing in the top surface of concrete: Fixing from above directly to the reinforcement (Fig. 3b)

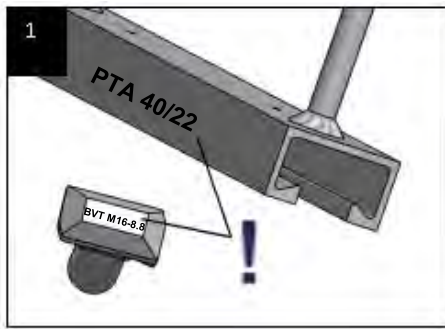


Cast in and compact the concrete.

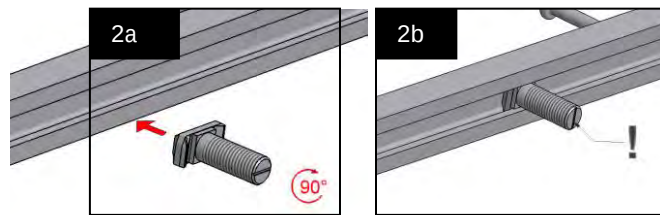


Removing the foam filler after hardening of the concrete and striking the formwork.

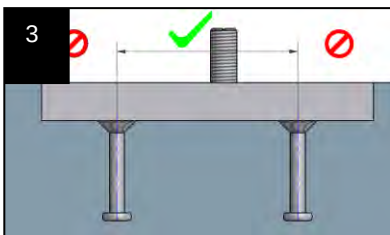
PreConTech cast-in anchor channel PTA 40/22	Annex B5
Installation instructions	



Selection of the BVT channel bolts in accordance with the planning document.

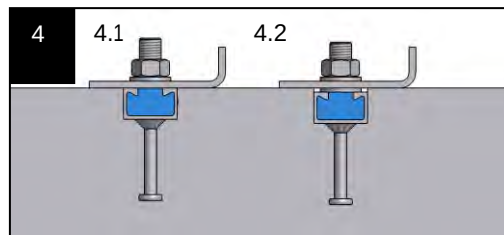


into the channel. After a 90° turn clockwise, the special screw locks into the channel. Check of the position of the screw by notch.



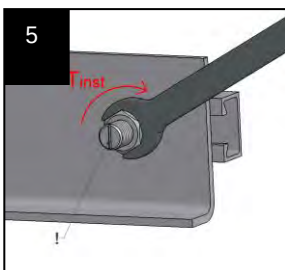
Positioning of the special screw:

At the channel ends a minimum clearance must be maintained.



4.1: General Fixing

4.2: Fixing with steel to steel contact.



Tighten the hexagonal nut to the installation torque T_{inst} acc. annex B3

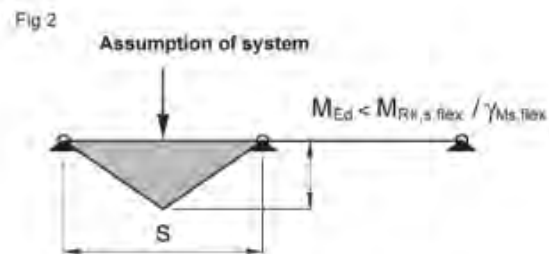
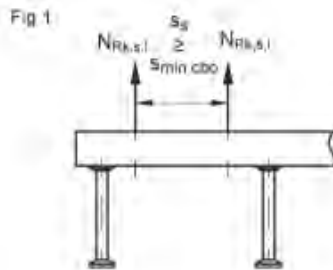
T_{inst} must not be exceeded. After fixing the nuts: check the correct position of the screw.

PreConTech cast-in anchor channel PTA 40/22	Annex B5
Installation instructions	

Anchor channel	Steel
----------------	-------

		40/22
Characteristic Resistance	$N_{Rk,s,a}$ [kN]	36,8
Partial safety factor	γ_{Ms}	1,80
Characteristic resistance	$N_{Rk,s,c}$ [kN]	15,4
Partial safety factor	$\gamma_{Ms,c}$	1,80
Characteristic spacing of channel bolts for $N_{Rk,s,l}$	$s_{l,N}$ [mm]	80
Characteristic resistance	$N^0_{Rk,s,l}$ [kN]	15,4
Partial safety factor	$\gamma_{Ms,l}^{1)}$	1,80

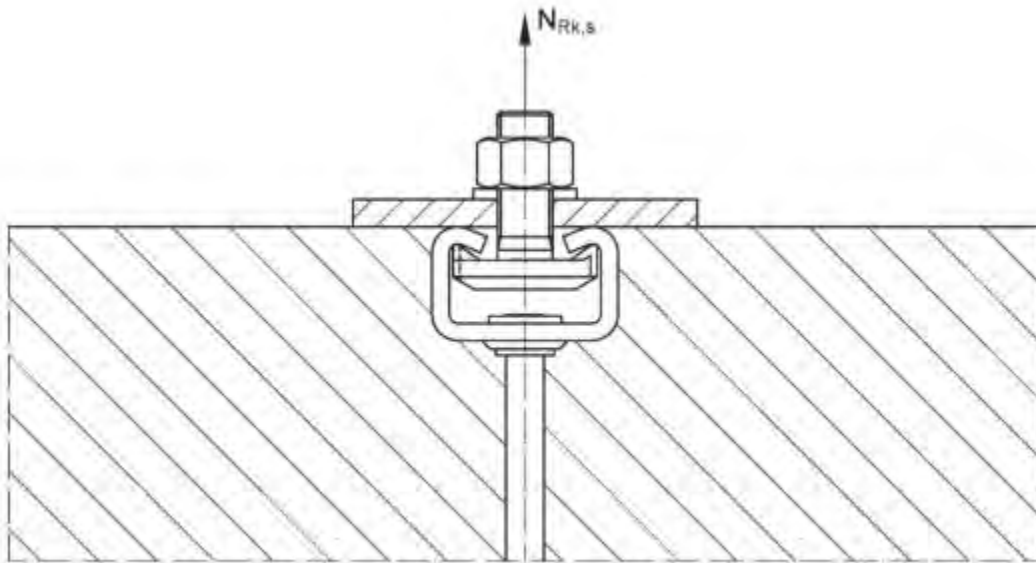
¹⁾ In absence of national regulations



Anchor Channel (fig. 2)				40/22
Characteristic flexure resistance of channel	$M_{Rk,s,flex}$	[Nm]	Steel	1276
Partial safety factor	$\gamma_{Ms,flex}^{1)}$			1,15

¹⁾ In absence of national regulations

PreConTech cast-in anchor channel PTA 40/22	Annex C1
Characteristic resistances under tension load Steel failure channel	



Channel under tension load

Steel Failure, Channel Bolts			PTA 40/22
Characteristic resistance	$N_{Rk,s}$ [kN]	PTA M16 8.8	121,0
Partial safety factor		γ_{Ms} ¹⁾	1,5

¹⁾ In absence of national regulations

PreConTech cast-in anchor channel PTA 40/22	Annex C2
Characteristic resistances under tension load Steel failure channel bolts	

Anchor Channel			Steel
			40/22
Characteristic resistance in cracked concrete C12/15	$N_{Rk,p}$ [kN]		12,4
Characteristic resistance in uncracked concrete C12/15			17,3
Increasing factor of $N_{Rk,p}$	C20/25	$\Psi_c[-]$	1,67
	C25/30		2,08
	C30/37		2,50
	C35/45		2,92
	C40/50		3,33
	C45/55		3,75
	C50/60		4,17
	C55/67		4,58
	$\geq C60/75$		5,00
Partial safety factor		$\gamma_{Mp} = \gamma_{Mc}^{1)}$	1,5
Product factor	Cracked concrete	$k_{cr,n}$	$[N^{0,5}/mm^{0,5}]$
	Uncracked concrete	$k_{ucr,N}$	
Characteristic edge distance	$c_{cr,sp}$	[mm]	234
Characteristic spacing	$s_{cr,sp}$		468
Partial safety factor		$\gamma_{Mp} = \gamma_{Mc}^{1)}$	1,5

¹⁾ In absence of national regulations

Material		Steel
Anchor channel		40/22
Tension load	N_{Ek} [kN]	6,1
Short time displacement	δ_{N0} [mm]	0,3
Long-time displacement	$\delta_{N\infty}$ [mm]	0,6

PreConTech cast-in anchor channel PTA 40/22	Annex C3
Characteristic resistances under tension load Concrete failure and displacements	

Anchor channel PTA 40/22		Steel	
Characteristic resistance	$V_{Rk,s,a}$ [kN]	15,4	
	$V_{Rk,s,c}$ [kN]		
	$V^0_{Rk,s,l}$ [kN]		
Partial safety factor	γ_{Ms}	1,5	
Partial safety factor acc. TR047 resp. EN 1992-4	$\gamma_{Ms, ca} = \gamma_{Ms, l}^{1)}$	1,8	
Pry-out failure			
Product factor	$k_8^{2)}$	2,0	
Partial safety factor	$\gamma_{Mc}^{1)}$	1,5	
Steel failure: Local flexure of channel lips			
Characteristic spacing of channel bolts for $V_{Rk,s,l}$	$s_{l,v}$ [mm]	80	
Concrete edge failure			
Product factor	Cracked concrete	$k_{cr,V}$	4,5
Product factor	Uncracked concrete	$k_{ucr,V}$	6,3
Partial safety factor		$\gamma_{Mc}^{1)}$	1,5

Characteristic resistances under shear load

1) In absence of national regulations

2) Without supplementary reinforcement. In case of supplementary reinforcement, the factor k_8 should be multiplied with 0,75.

Material		Steel
Anchor channel		40/22
Shear load	V_{Ek} [kN]	6,1
Short time displacement	δ_{v0} [mm]	0,3
Long-time displacement	$\delta_{v\infty}$ [mm]	0,45

Displacements under shear load

PreConTech cast-in anchor channel PTA 40/22	Annex C4
Characteristic resistances of anchor channels under shear load Steel failure of anchor channel, concrete failure, displacements	 PreConTech

Steel Failure, Channel Bolts			PTA 40/22
Characteristic resistance	$V_{Rk,s}$ [kN]	PTA M16 8.8	62,8
Partial safety factor		γ_{Ms} ¹⁾	1,25

¹⁾ In absence of national regulations

PreConTech cast-in anchor channel PTA 40/22	Annex C5
Characteristic resistances under shear load Steel failure channel bolts	

Steel Failure, Channel Bolts			PTA 40/22
Characteristic resistance	$M^0_{Rk,s}$, [kN]	PTA M16 8.8	265,9
Partial safety factor		$\gamma_{Ms}^{1)}$	1,5

¹⁾ In absence of national regulations

PreConTech cast-in anchor channel PTA 40/22	Annex C6
Characteristic resistances under shear load Steel failure channel bolts	

Internal lever arm of channel bolts		PTA 40/22
a[mm]	PTA M16	27 mm

Internal lever arm between tension and compression force

Anchor channel		Steel
		40/22
Product factor	k_{13}	1
	k_{14}	1

Characteristic resistances under combined tension and shear load

PreConTech cast-in anchor channel PTA 40/22	Annex C7
Characteristic resistances under combined tension and shear load Steel failure channel bolts	

ALLGEMEINE BAUAUFSICHTLICHE ZULASSUNG
GENERAL CERTIFICATE OF APPROVAL



ETA-Danmark A/S
Göteborg Plads 1
DK-2150 Nordhavn
Tel. +45 72 24 59 00
Fax +45 72 24 59 04
Internet www.etadanmark.dk

Authorised and notified according
to Article 29 of the Regulation (EU)
No 305/2011 of the European
Parliament and of the Council of 9
March 2011



European Technical Assessment ETA-19/0348 of 2019/10/22

I General Part

Technical Assessment Body issuing the ETA and designated according to Article 66 of the Regulation (EU) No 305/2011: ETA-Danmark A/S

Trade name of the construction product:

PreConTech anchor channel PTA 50/30 and 52/34

Product family to which the above construction product belongs:

Anchor Channels

Manufacturer:

PreConTech e.K
Beckerweg 6
D-65468 Trebur
Tel.: +49 6147 913 920
Fax: +49 6147 913 929
www.precontech.net

Manufacturing plant:

PreConTech e.K
Beckerweg 6
D-65468 Trebur

This European Technical Assessment contains:

24 pages including 15 annexes which form an integral part of the document

This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, based on:

European Assessment Document (EAD)
330008-03-0601, dated February 2019

This version replaces:

-

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II SPECIFIC PART OF THE EUROPEAN TECHNICAL ASSESSMENT

1 Technical description of product and intended use

Technical description of the product

The PreConTech, anchor channel “PTA” are hot-rolled (dimensions: 50/30 & 52/34) anchor channels for anchorage in cracked and noncracked normal weight concrete $\geq$ C20/25 to C90/105 in accordance to European Assessment Document (EAD) 330008-03-0601, February 2019.

The anchor channel consists of a U-shaped unalloyed hot-rolled channel, as a minimum two round anchors welded on the back of the channel and hook-head channel bolts. The anchor channel was cast in a specimen up to its full depth. The hook-head channel bolt of the size M12, M16 and M20 was hooked in the channel.

The anchor channel is intended to be used for anchorage under predominately static or quasi-static loading and fatigue cyclic load in reinforced or unreinforced normal weight concrete of strength classes C20/25 at minimum and C90/105 at maximum. Galvanized steel is used for every section of the channel. The channel bolt consists of material class 8.8

Detailed specifications for identification and performance criteria for fire safety regarding the construction products are given in ANNEXES.

2 Specification of the intended use in accordance with the applicable EAD

The performance given in section 3 are only valid if the anchor channel is used in compliance with the specifications and conditions given in Annex B.

The anchor channel is intended to be used for anchorage under predominately static or quasi-static loading and fatigue cyclic load in reinforced or unreinforced normal weight concrete of strength classes C20/25 at minimum and C90/105 at maximum. Galvanized steel is used for every section of the channel. The channel bolt consists of material class 8.8

The tensile strength of the channel, the anchors and the channel bolts has been tested according to EAD, the results are shown in table 2.1

Table 2.1: Strength properties of the channel, the anchors and channel bolts

	Material	Yield strength f_{yk} [N/mm ²]	Tensile strength f_{tk} [N/mm ²]
anchors	50/30	560	450
	52/34	430	250
channels	50/30	550	500
	52/34	540	500
Channel bolts	8.8	800	640

The provisions made in this European Technical Assessment are based on an assumed intended working life of the anchor channels of 50 years, provided the manufacturers conditions for the packaging, transport, storage, installation, use, maintenance and repair are met.

The indications given on the working life cannot be interpreted as a guarantee given by the producer or Assessment Body but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

3 Performance of the product and references to the methods used for its assessment*

Characteristic	Assessment of characteristic
3.1 Mechanical resistance and stability (BWR1)	
2.2.1 Resistance to steel failure of anchors $N_{Rk,s,a}$ [kN]	See Annex C1
2.2.2 Resistance to steel failure of the connection between anchors and channel $N_{Rk,s,c}$ [kN]	See Annex C1
2.2.3 Resistance to steel failure of channel lips and subsequently pull-out of channel bolt $N_{Rk,s,l}^0; S_{l,N}$	See Annex C1
2.2.4 Resistance to steel failure of channel bolt $N_{Rk,s}$ [kN]	See Annex C2
2.2.5 Resistance to steel failure by exceeding the bending strength of the channel $N_{Rk,s,flex}$ [kN]	See Annex C3
2.2.6 Maximum installation torque moment to avoid damage during installation $T_{inst,g}; (T_{inst,s})$ [Nm]	See Annex A2
2.2.7 Resistance to pull-out failure of the anchor $N_{Rk,p}; N_{Rk,p}$ (Uncracked/Cracked concrete) [kN]	See Annex C3
2.2.8 Resistance to concrete cone failure $k_{ucr,N} = \alpha_{ch,N} \times 12,7$ (Uncracked concrete) [$N^{0,5}/mm^{0,5}$] $k_{cr,N} = \alpha_{ch,N} \times 8,9$ (Uncracked concrete) [$N^{0,5}/mm^{0,5}$]	See Annex C3
2.2.9 Minimum edge distances, spacing and member thickness to avoid concrete splitting during installation $S_{min}; c_{min}; h_{min}$ [mm]	See Annex B2
2.2.10 Characteristic edge distance and spacing to avoid splitting of concrete under load $S_{cr,sp}; C_{cr,sp}$ [mm]	See Annex C3
2.2.11 Resistance to blowout failure – bearing area of anchor head A_h	See Annex A3
2.2.12 Resistance to steel failure of anchor bolt under shear loading without lever arm $V_{Rk,s}$ [kN]	See Annex C5
2.2.13 Resistance to steel failure by bending of the channel bolt under shear load with lever arm $M_{Rk,s}^0$ [Nmm]	See Annex C5
2.2.14 Resistance to steel failure of channel lips, steel failure of connection between anchor and channel or steel failure of anchor (shear load in transverse direction) $V_{Rk,s,l,y}^0; S_{l,v}; V_{Rk,s,c,y}; V_{Rk,s,a,y}$	The values k_{13} and k_{14} correspond to 1 (2.2.21), which according to the EAD results in tests to be omitted.

Characteristic	Assessment of characteristic
2.2.15 Resistance to steel failure of connection between channel lips and channel bolt (shear load in longitudinal channel axis) $V_{Rk,s,l,x}$	No Performance Assessed
2.2.16 Factor for sensitivity to installation γ_{inst}	No Performance Assessed
2.2.17 Resistance to steel failure of the anchor $V_{Rk,s,a,x}$	No Performance Assessed
2.2.18 Resistance to steel failure of connection between anchor and channel $V_{Rk,s,c,x}$	No Performance Assessed
2.2.19 Resistance to concrete pry-out failure k_g	$k_g = 2,0$ for anchor channels with $h_{ef} \geq 60$ mm is accepted.
2.2.20 Resistance to concrete edge failure $k_{cr,v}; k_{ucr,v}$	No tests are required for the channel 50/30, since $k_{cr,V} = 4,5$ [N0,5/mm0,33] and $k_{ucr,V} = 6,3$ [N0,5/mm0,33] are accepted and the conditions $h_{ch}/h_{ef} < 0,4$; $b_{ch}/h_{ef} < 0,7$ are fulfilled.
2.2.21 Resistance to steel failure of the anchor channel $k_{13}; k_{14}$	The values k_{13} and k_{14} are taken from EN 1992-4.
2.2.22 Fatigue resistance to steel failure of the whole system (continuous or tri-linear function) $\Delta N_{Rk,s,0,n}$ ($n=1$ to $n=\infty$)	No Performance Assessed
2.2.23 Fatigue limit resistance to steel failure of the whole system $\Delta N_{Rk,s,0,\infty}$	No Performance Assessed
2.2.24 Fatigue resistance to concrete related failure $\Delta N_{Rk,c,0,n}$ $\Delta N_{Rk,p,0,n}$ ($n=1$ to $n=\infty$)	No Performance Assessed
2.2.25 Displacements $\delta_{N0}, \delta_{N\infty}, \delta_{v,y,0}, \delta_{v,y,\infty}, \delta_{v,x,0}, \delta_{v,x,\infty},$	No Performance Assessed
3.2 Safety in case of fire (BWR2)	
2.2.10 Reaction to fire	Class A1 according to EC Decision 96/603/EC
2.2.11 Resistance to fire $N_{Rk,s,fi}; V_{Rk,s,fi}$	No Performance Assessed

*) See additional information in section 3.6 – 3.7.

3.6 Methods of verification

The product is fully covered by EAD 330008-03-0601, February 2019. According to the Regulation (EU) No 305/2011.

3.7 General aspects related to the fitness for use of the product

The European Technical Assessment is issued for the product based on agreed data/information, deposited with ETA-Danmark, which identifies the product that has been assessed and judged. Changes to the product or production process, which could result in this deposited data/information being incorrect, should be notified to ETA-Danmark before the changes are introduced. ETA-Danmark will decide if such changes affect the ETA and consequently the validity of the CE marking based on the ETA and if so whether further assessment or alterations to the ETA, shall be necessary.

PreConTech anchor channel PTA 50/30 and 52/34 are manufactured in accordance with the provisions of this European Technical Assessment using the manufacturing processes as identified in the inspection of the plant by the notified inspection body and laid down in the technical documentation.

4 Attestation and verification of constancy of performance (AVCP)

4.1 AVCP system

According to the decision 1999/454/EC of the European Commission, as amended, the system(s) of assessment and verification of constancy of performance is system 1 (see Annex V to Regulation (EU) No 305/2011).

5 Technical details necessary for the implementation of the AVCP system, as foreseen in the applicable EAD

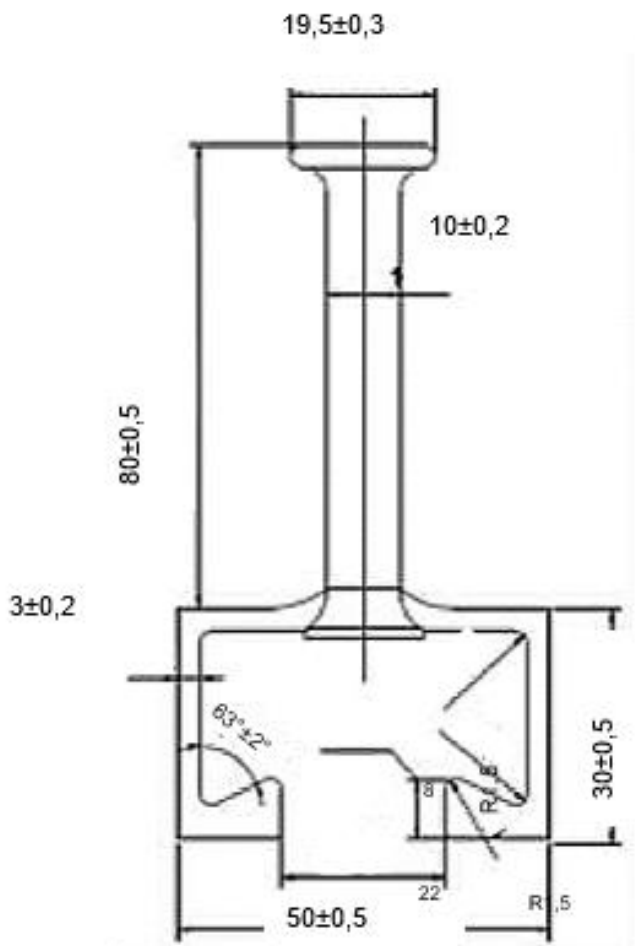
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at ETA-Danmark prior to CE marking

Issued in Copenhagen on 2019-10-22 by

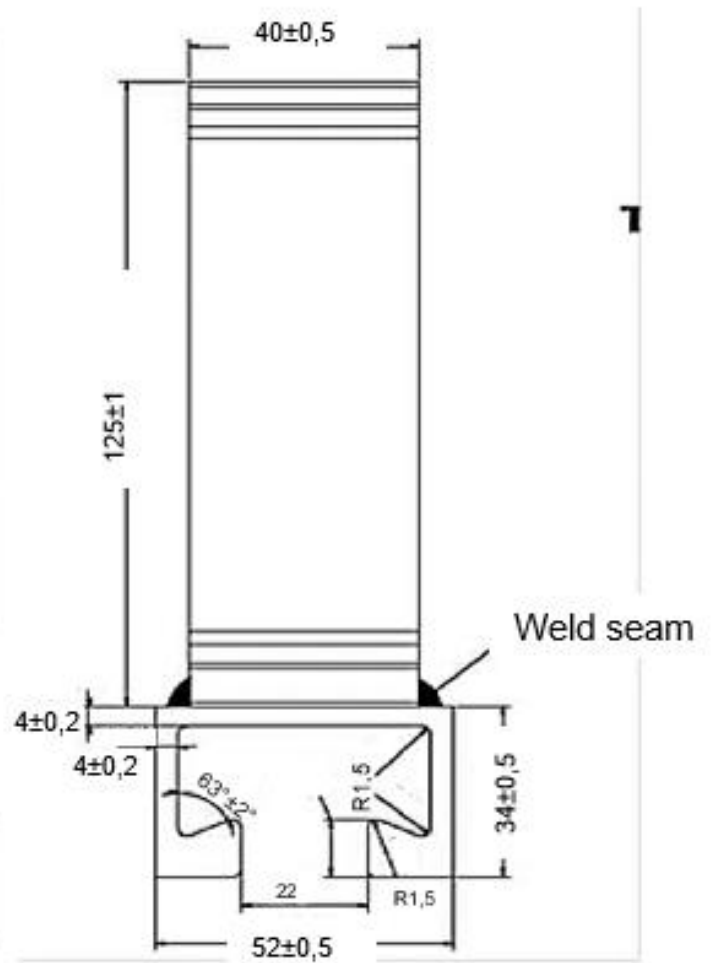


Thomas Bruun
Managing Director, ETA-Danmark

Anchor Channel 50/30 with round anchor



Anchor Channel 52/34 with I-anchor



PreConTech anchor channel PTA 50/30 and 52/34

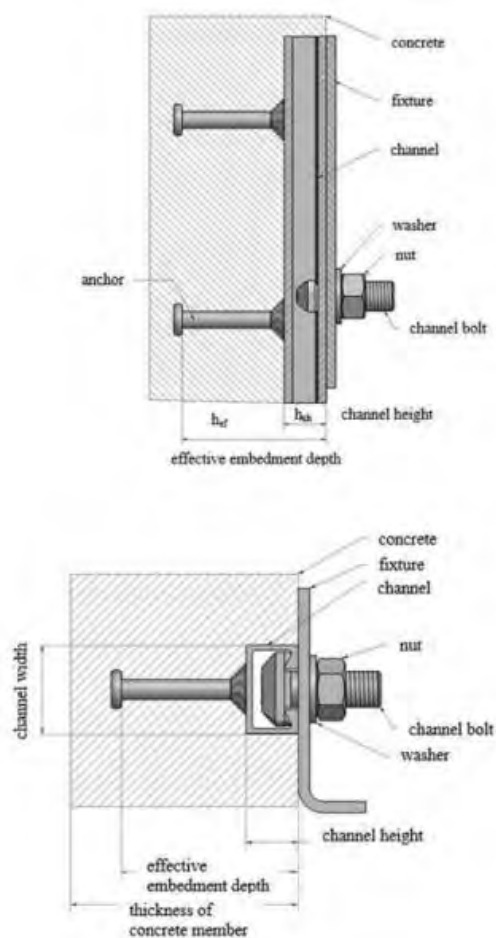
Annex A1

Illustration of the Anchor

Installation parameters

Anchor channel			50/30	52/34
Minimum effective embedment depth	$h_{ef,min}$	[mm]	88	154
Minimum edge distance	c_{min}		75	100
Minimum member thickness	h_{min}		120	190

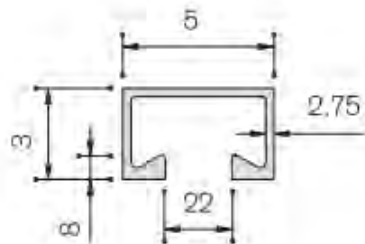
anchor channel/channel bolt	End distance	Minimum spacing between	Minimum spacing to anchor	Maximum spacing to anchor	torque (general)	torque (steel steel contact)
	x [mm]	$s_{min,cbo}$ [mm]	s_{min} [mm]	s_{max} [mm]	T_{Inst} [Nm]	T_{Inst} [Nm]
50/30 M12 8.8	25	60	100	250	15	78
50/30 M16 8.8		80			60	104
50/30 M20 8.8		100			75	143
52/34 M12 8.8	25	60	100	250	25	91
52/34 M16 8.8		80			60	180
52/34 M20 8.8		100			120	260



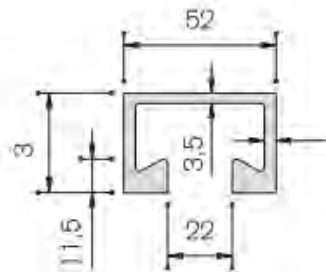
PreConTech anchor channel PTA 50/30 and 52/34	Annex A2
Installation conditions	

		50/30	52/34
Thickness of the channel t_{ch}	[mm]	3,0	4,0
Width of the channel b_{ch}	[mm]	50,0	52,0
Opening b_l	[mm]	22,0	22,0
Height of the channel h_{ch}	[mm]	30,0	34,0
Thickness of the channel lips t_{ch}	[mm]	8,0	10,0
length of the anchor l_a	[mm]	60,0	125,0
Ø anchor d_a	[mm]	10,0	-
Ø anchor head d_h	[mm]	19,5	-
Width of the head of the I-anchor b_h	[mm]	-	20,0
Web thickness of I-anchor t_w	[mm]	-	5,0
Width (cutting length of I-anchor) w_A	[mm]	-	40
Height of the anchor head t_h	[mm]	3	5
Min. anchorage depth h_{ef}	[mm]	88	154
Min. edge distance c_{min}	[mm]	175	100
I_y	[mm ⁴]	57630	97150

PTA 50/30



PTA 52/34

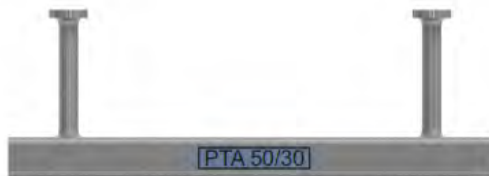


PreConTech anchor channel PTA 50/30 and 52/34

Annex A3

Geometric parameters of the channel

Marking of the PreConTech anchor channel



PTA = Identifying mark of the producer
PreConTech

50/30 = size

Close to the anchor a nail hole is positioned

Stumped on the inside the channel and on channel web

Marking of the PreConTech channel bolt – BVT M16-8.8



BVT = Identifying mark of the producer
PreConTech

M16 = size

= strength grade

PreConTech anchor channel PTA 50/30 and 52/34

Annex A4

Marking and materials

Table A5.1: Dimensions of the anchor channels

		50/30	52/34
Thickness of the channel t_{ch}	[mm]	3,0	4,0
Width of the channel b_{ch}	[mm]	50,0	52,0
Opening b_1	[mm]	22,0	22,0
Height of the channel h_{ch}	[mm]	30,0	34,0
Thickness of the channel lips t_{ch}	[mm]	8,0	10,0
length of the anchor l_a	[mm]	60,0	125,0
Ø anchor d_a	[mm]	10,0	-
Ø anchor head d_h	[mm]	19,5	-
Width of the head of the I-anchor b_h	[mm]	-	20,0
Web thickness of I-anchor t_w	[mm]	-	5,0
Width (cutting length of I-anchor) w_A	[mm]	-	40
Height of the anchor head t_h	[mm]	3	5
Min. anchorage depth h_{ef}	[mm]	88	154
Min. edge distance c_{min}	[mm]	175	100
I_y	[mm ⁴]	57630	97150

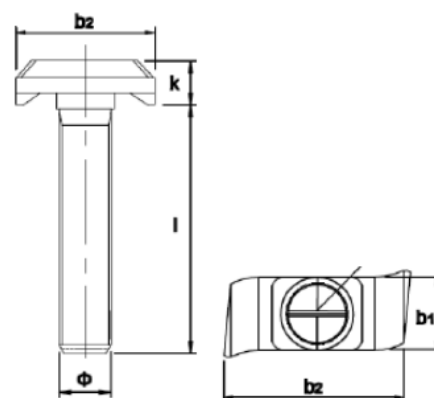


Table A5.2: Dimensions of the channel bolt

Bolt	Thread diameter	Head width b_1	Head length b_2	Head thickness	Length	Applied profile
[mm]						
50/30	M12	13	43	13.6	30-200	50/30
50/30	M16	17	42	14.4	30-300	52/34
50/30	M20	21	42	15.4	35-300	54/33

*) apply to strength grade 8.8 only

Table A5.3: Strength properties of the channel, the anchors and channel bolts

	Material	Yield strength f_{yk} [N/mm ²]	Tensile strength f_{tk} [N/mm ²]
anchors	50/30	560	450
	52/34	430	250
channels	50/30	550	500
	52/34	540	500
Channel bolts	8.8	800	640

PreConTech anchor channel PTA 50/30 and 52/34

Annex A5

Channel bolts, dimensions and strength grade

Item no	Intended use		
	Specification	Dry internal conditions	Internal conditions with usual humidity
		Anchor channels may only be used in structures subject to dry internal conditions (e.g. accommodations, bureaus, schools, hospitals, shops except internal conditions with usual humidity according to the following column.	Anchor channels may also be used in structures subject to internal conditions with usual humidity (e.g. kitchen, bath and laundry in residential buildings, except permanently damp conditions and applications under water)
1	Channel Profile	Steel 1.0038: 1.0044 EN 10025 Hot dip galv. $\geq 50 \mu\text{m}$	Steel 1.0038: 1.0044 EN 10025 Hot dip galv. $\geq 50 \mu\text{m}$
2	Anchor	Hot dip galv. Steel acc. to EN ISO 1461 $\geq 50 \mu\text{m}$	Hot dip galv. Steel acc. to EN ISO 1461 $\geq 50 \mu\text{m}$
3	Channel bolt thread and shaft acc. EN ISO 4018	Steel strength class 8.8 acc. to EN ISO 898-1 hot dip galv. acc. to EN ISO 10684 $\geq 50 \mu\text{m}$	Steel strength class 8.8 acc. to EN ISO 898-1 hot dip galv. acc. to EN ISO 10684 $\geq 50 \mu\text{m}$
4	Washer, EN ISO 7089 and 7093-1	Steel acc. to EN 10025 hot dip galv. acc. to EN ISO 4042 $\geq 5 \mu\text{m}$	Steel acc. to EN 10025 hot dip galv. acc. to EN ISO 4042 $\geq 5 \mu\text{m}$
5	Hexagon nuts EN ISO 4032	Steel strength class 8.8 hot dip galv. acc. to EN ISO 4042 $\geq 50 \mu\text{m}$	Steel strength class 8.8 hot dip galv. acc. to EN ISO 4042 $\geq 50 \mu\text{m}$

PreConTech anchor channel PTA 50/30 and 52/34	Annex A6
Materials and intended use	



Specifications of intended use

Anchor channel and channel bolts subject to:

- Static and quasi-static loads in tension and shear perpendicular to the longitudinal axis of the channel.

Base materials:

- Reinforced or unreinforced normal weight concrete according to EN 206-1.
- Strength classes C20/25 to C90/105 according to EN 206-1.
- Cracked or uncracked concrete

Use conditions (Environmental conditions):

- Structures subject to dry internal conditions (e.g. accommodations, bureaus, schools, hospitals, shops exceptional internal conditions with usual humidity). According to Annex A6
- Structures subject to internal conditions with usual humidity (e.g. kitchen, bath and laundry in residential buildings, exceptional permanent damp conditions and application under water). According to Annex A6

Design:

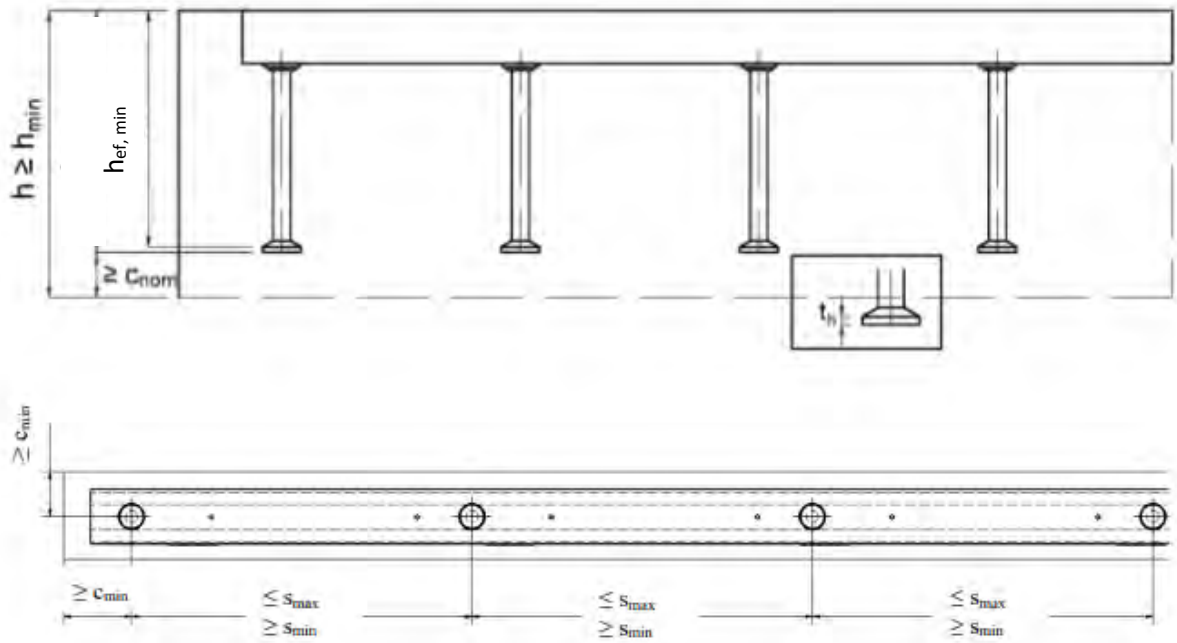
- Anchor channels are designed under the responsibility of an engineer experienced in anchorages and concrete work.
- Verifiable calculations notes and drawings are prepared taking account of the loads to be anchored. The position of the anchor channel and channel bolts are indicated on the design drawings (e.g. position of the anchor channel relative to the reinforcement or to supports).
- For static and quasi-static loading as well as fire exposure the anchor channels are designed in accordance with EOTA TR 047 "Calculation Method for the Performance of Anchor Channels" or for EN 1992-4.
- The characteristic resistances are calculated with the minimum effective embedment depth.

Installation:

- The installation of the anchor channels is carried out by appropriately qualified personnel under the supervision of the person responsible for the technical matters on site.
- Use of the anchor channels only as supplied by the manufacturer - without any manipulations, repositioning or exchanging of channel components.
- Installation in accordance with the installation instructions given in Annex B4-B5.
- The anchor channels are fixed on the formwork, reinforcement or auxiliary construction such that no movement of the channels will occur during the time of laying the reinforcement and of placing and compacting the concrete.
- The concrete under the head of the anchors is properly compacted. The anchor channels are protected from penetration of concrete into the internal space of the channel profiles.
- Orientating the channel bolts (groove according to Annex B4-B5) rectangular to the channel axis.
- The required installation torques given in Annex B2 must be applied and must not be exceeded

PreConTech anchor channel PTA 50/30 and 52/34	Annex B1
Specifications	

Minimum effective embedment depths, edge distances and thicknesses of concrete members for hot-rolled anchor channels:



Anchor channel			Hot rolled profile	
			50/30	52/34
Embedment depth	h_{ef}	[mm]	88	154
Min. edge distance	c_{min}		75	100
Min. member thickness	h_{min}		120	190

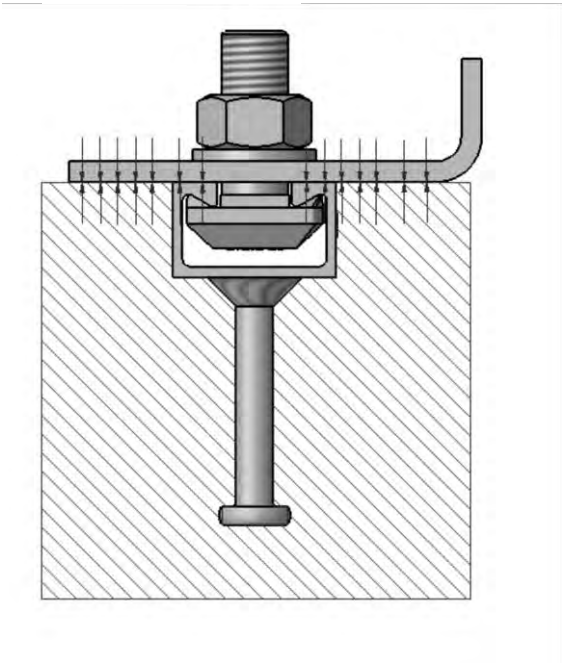
Anchor channel	Channel bolt	Min. spacing between bolts $S_{min, cbo}$	Installation torque $T_{inst, g}$
	[mm]	[mm]	[Nm]
50/30	M12 8.8	60	15
50/30	M16 8.8	80	60
50/30	M20 8.8	100	75
52/34	M12 8.8	60	25
52/34	M16 8.8	80	60
52/34	M20 8.8	100	120

PreConTech anchor channel PTA 50/30 and 52/34

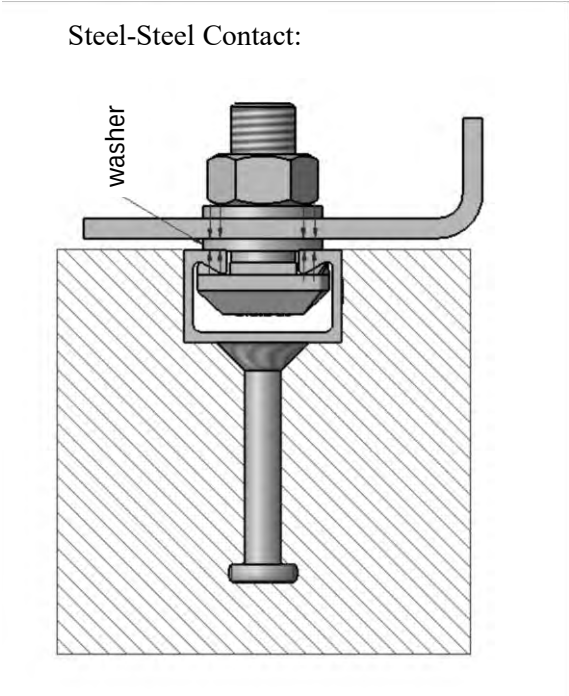
Installation parameters of anchor channels

Annex B2

General:



Steel-Steel Contact:

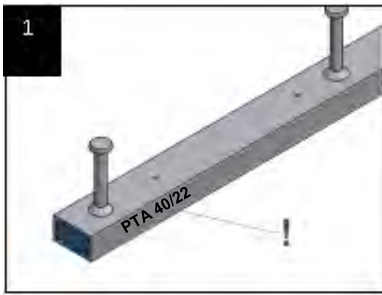


The fixture is in contact with the channel profile and the concrete surface by tightening with $T_{inst,g}$

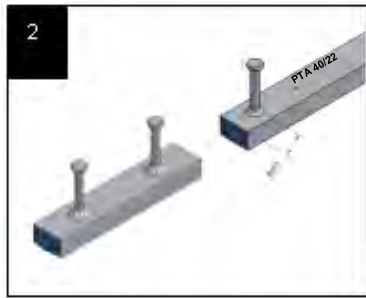
Steel-to-steel contact: The fixture is not in contact with the concrete surface.

The fixture is fastened to the anchor channel by suitable steel part (e.g. washer) by tightening with $T_{inst,s}$
($T_{inst,s} \geq T_{inst,g}$)"

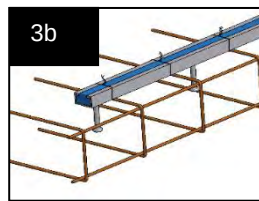
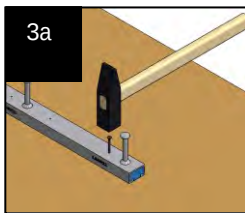
PreConTech anchor channel PTA 50/30 and 52/34	Annex B3
Positions of the fixture	



Selection of anchor channel in accordance with the planning document.

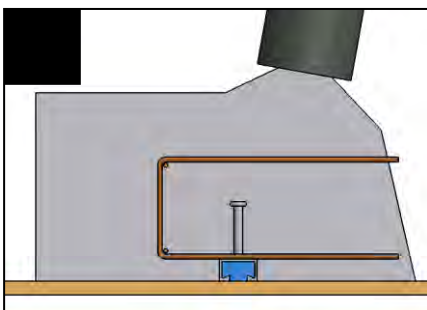


If cutting anchor channel follow min. end spacing acc. annex A6

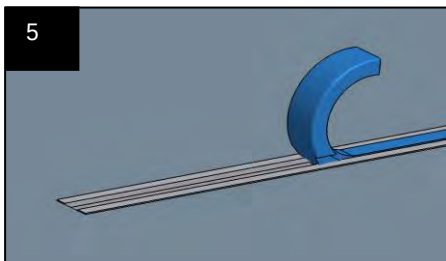


Placing channel into formwork as follows:

- Wood formwork: Fixing with nails (Fig. 3a)
- Fixing in the top surface of concrete: Fixing from above directly to the reinforcement (Fig. 3b)



Cast in and compact the concrete.

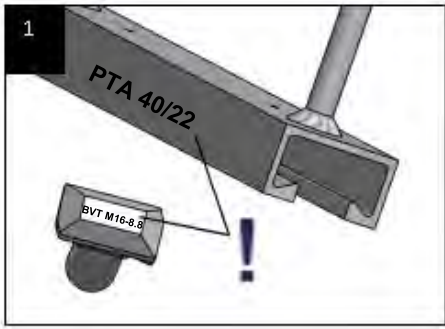


Removing the foam filler after hardening of the concrete and striking the formwork.

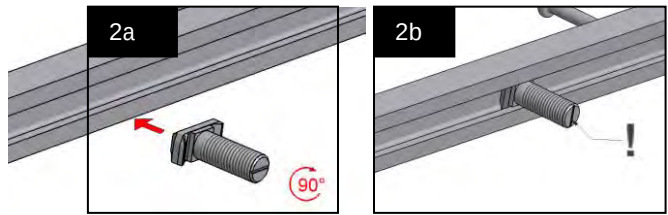
PreConTech anchor channel PTA 50/30 and 52/34

Annex B4

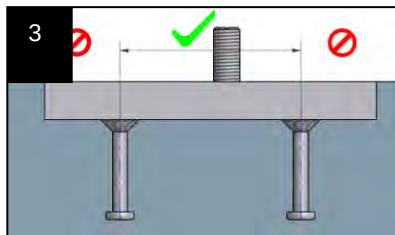
Installation instructions for the anchor channel



Selection of the BVT channel bolts in accordance with the planning document.

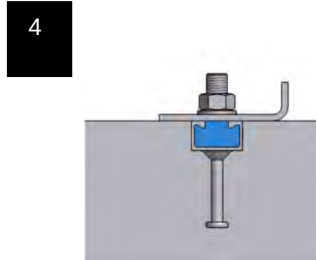


into the channel. After a 90° turn clockwise, the channel bolt locks into the channel. Check of the position of the screw by groove.

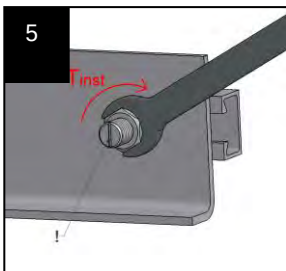


Positioning of the channel bolt:

At the channel ends a minimum clearance must be maintained.



4.1: General Fixing

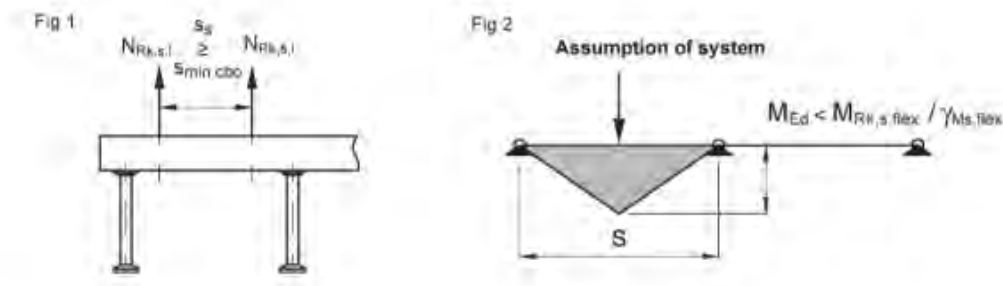


Tighten the hexagonal nut to the installation torque T_{inst} acc. annex B3
 T_{inst} must not be exceeded. After fixing the nuts: check the correct position of the screw.

PreConTech anchor channel PTA 50/30 and 52/34	Annex B5
Installation instructions for the anchor channel	

Anchor channel			50/30 M12 8.8	52/34 M20 8.8
Steel failure, anchor				
Characteristic resistance	$N_{Rk,s,a}$	[kN]	44,0	86,0
Steel failure, connection channel/anchor				
Characteristic resistance	$N_{Rk,s,c}$	[kN]	31,0	93,4
Steel failure, local flexure of the channel lips				
Spacing of the channel bolts for $N^0_{Rk,s,l}$	$S_{l,N}$	[mm]	100	104
Characteristic resistance	$N^0_{Rk,s,l}$	[kN]	31,0	93,4

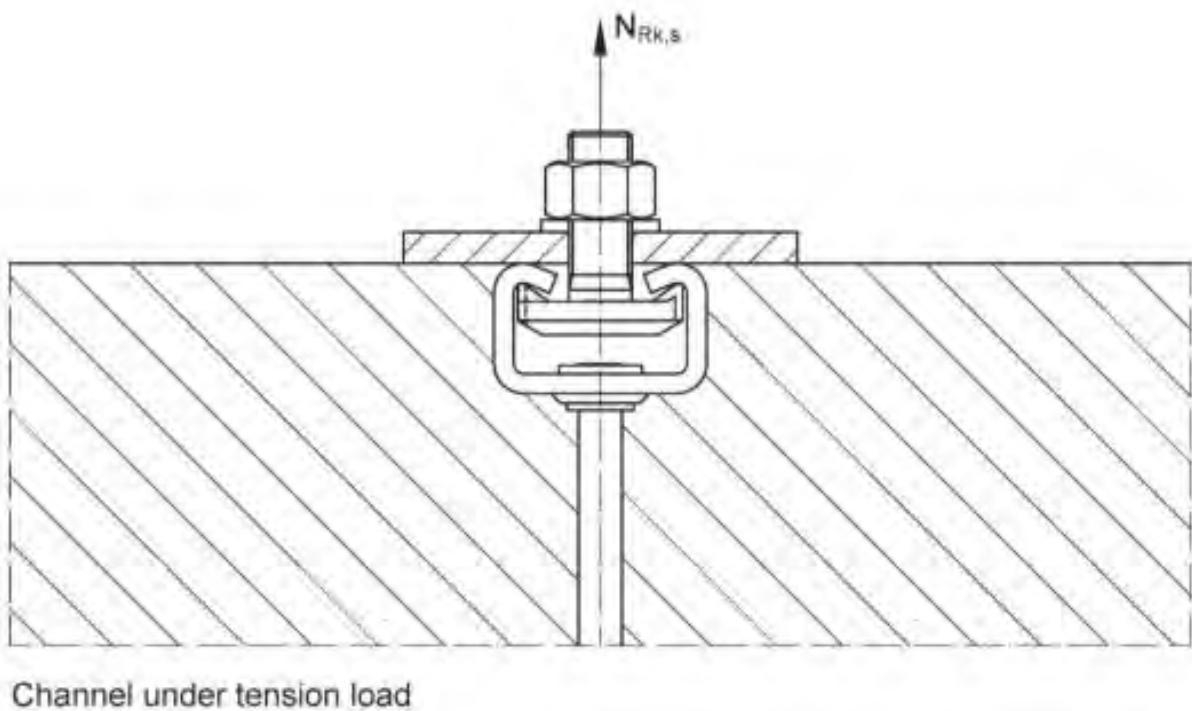
Table C1.1: Steel failure anchor, channel and channel lips



Anchor channel	5%-fractile of ultimate load $N_{Rk,s,test}$ [N]	Spacing of anchors in tests S_{test} [mm]	Actual mean yield strength of channel back f_y [N/mm ²]	Plastic section modulus of the tested channel around the y-axis computed with actual channel dimensions $W_{pl,y,act}$ [mm ³]	Degree of constraint $S = S_{max}$ α_r	Nominal yield strength of channel back f_{yk} [N/mm ²]	Minimum anchor spacing S_{min} specified by manufacturer [mm]	Characteristic resistance for bending failure $N_{Rk,s,flex}$ [kN]	Plastic section modulus around y-axis computed with nominal channel dimensions $W_{pl,y,nom}$ [mm ³]	Characteristic bending moment $M_{Rk,s,flex}$ [Nm]	$N_{Rk,s,l}$ [kN]
50/30	39925,9	250	512	4282	4,553	500	100	147,7	3887	2212,1	31,0
52/34	86471,5	250	514	6434	6,537	500	100	225,0	5921	4838,1	93,4

Table C1.2: Steel failure by exceeding the bending strength of the channel under tension load

PreConTech anchor channel PTA 50/30 and 52/34	Annex C1
Characteristic resistances under tension load Steel failure of anchor channel	



Channel bolt	Nominal characteristic tensile strength of channel bolt shaft	actual tensile strength of channel bolt shaft $f_{uk, test}$	Stressed cross section of channel bolt $A_s^{1)}$	$N_{Rk, s}$ [kN]	$N_{Rk, s} < N_{Rk, s, test}$
Diameter [mm]					
12		880	84,3	67,4	y
16	800	844	157,0	94,7	y
20	800	718	245,0	111,9	n

Table C2: Steel failure of the channel bolt under tension load, according to 2.2.2.4

PreConTech anchor channel PTA 50/30 and 52/34	Annex C2
Characteristic resistances under tension load Steel failure channel bolts	

Anchor channel	5%-fractile of ultimate load $N_{Rk,s, test}$ [N]	Spacing of anchors in tests s_{test} [mm]	Actual mean yield strength of channel back f_y [N/mm ²]	Plastic section modulus of the tested channel around the y-axis computed with actual channel dimensions $W_{pl,y,act}$ [mm ³]	Degree of constraint $s = s_{max}$ α_r	Nominal yield strength of channel back f_{yk} [N/mm ²]	Minimum anchor spacing s_{min} specified by manufacturer [mm]	Characteristic resistance for bending failure $N_{Rk,s, flex}$ [kN]	Plastic section modulus around y-axis computed with nominal channel dimensions $W_{pl,y,nom}$ [mm ³]	Characteristic bending moment $M_{Rk,s, flex}$ [Nm]	$N_{Rk,s,l}$ [kN]
50/30	39925,9	250	512	4282	4,553	500	100	147,7	3887	2212,1	31,0
52/34	86471,5	250	514	6434	6,537	500	100	225,0	5921	4838,1	93,4

Table C3.1: Steel failure by exceeding the bending strength of the channel under tension load, according to 2.2.2.5

anchor channel with round anchor	Anchor diameter d_a [mm]	Anchor head diameter d_h [mm]	Anchor head height t_h [mm]	$k_2 = 10,5$ uncracked concrete; $k_2 = 7,5$ cracked concrete	Nominal characteristic compressive cylinder strength f_{ck} [N/mm ²]	Projected load bearing area of the head of the fastener A_h [mm ²]	Condition $6 \times t_h + d_a$	Characteristic resistance for pull-out failure $N_{Rk,P}$ cracked and uncracked concrete
50/30	10	19,5	3	10,5	20	220,1	28,0	46,0 (uncracked, C20/25)
50/30	10	19,5	3	7,5	20	220,1	28,0	33,0 (cracked, C20/25)

anchor channel with I-anchor	Web thickness of I-anchor t_w [mm]	Width of the head of the I-anchor b_h [mm]	Anchor head height t_h [mm]	$k_2 = 10,5$ uncracked concrete; $k_2 = 7,5$ cracked concrete	Nominal characteristic compressive cylinder strength f_{ck} [N/mm ²]	Projected load bearing area of the head of the fastener A_h [mm ²]	Condition $6 \times b_h + t_w$	Characteristic resistance for pull-out failure $N_{Rk,P}$ cracked and uncracked
52/34	5	20	5	10,5	20	600,0	35	126,0 (uncracked, C20/25)
52/34	5	20	5	7,5	20	600,0	35	90,0 (cracked, C20/25)

Table C3.2: Pull out resistance under tension load, according to 2.2.2.7

anchor channel	Channel height h_{ch} [mm]	Effective embedment depth h_{ef} [mm]	Channel width b_{ch} [mm]	h_{ch}/h_{ef}	$h_{ch}/h_{ef} < 0,4$	b_{ch}/h_{ef}	$b_{ch}/h_{ef} < 0,7$	$\alpha_{ch,N}$	$\alpha_{ch,N} < 1,0$	$k_{cr,N} = \alpha_{ch,N} \times 8,9$ for cracked concrete	$k_{ucr,N} = \alpha_{ch,N} \times 12,7$ for uncracked concrete
50/30	30	88	50	0,34	Y	0,57	Y	0,90	Y	8,0	11,4
52/34	34	154	52	0,22	Y	0,34	Y	0,98	Y	8,7	12,4

Table C3.3: Cone failure resistance under tension load, according to 2.2.2.8

PreConTech anchor channel PTA 50/30 and 52/34	Annex C3
Steel failure, Pull out resistance, Cone failure and Splitting failure	

Increasing factor of $N_{Rk,p}$	Strength class	Ψ_{c1}/Ψ_{c2}	Non linear conversion
	C25/30		1,12
	C30/37		1,22
	C35/45		1,32
	C40/50		1,41
	C45/55		1,50
	C50/60		1,58
	C55/67		1,66
	$\geq C60/75$		1,73

Table C3.4: Linear conversion

Anchor channel	Minimum edge distance specified by manufacturer c_{min} [mm]	Minimum spacing specified by manufacturer s_{min} [mm]
50/30 M20 8.8	75	100
52/34 M20 8.8	100	100
50/30 M20 8.8	75	100
52/34 M20 8.8	100	100

Table C3.5: Splitting failure resistance, due to installation, according to 2.2.2.9

PreConTech anchor channel PTA 50/30 and 52/34	Annex C3
Steel failure, Pull out resistance, Cone failure and Splitting failure	



No.	Channel	N_{test} [kN]	Statistic	
2.1	50/30 M12 8.8	38,77	$N_{m,test}$ [kN]	38,80
2.2		37,45	σ_{test} [kN]	1,03
2.3		39,62	V_{test} [%]	2,65
2.4		38,18	$N_{Rk,s,c,test}$ [kN]	35,30
2.5		39,96	k_s	3,401
2.6		-	n	5
No.	Channel	N_{test} [kN]	Statistic	
2.1	52/34 M20 8.8	110,70	$N_{m,test}$ [kN]	110,18
2.2		111,70	σ_{test} [kN]	1,20
2.3		110,50	V_{test} [%]	1,09
2.4		108,60	$N_{Rk,s,c,test}$ [kN]	106,09
2.5		109,40	k_s	3,401
2.6		-	n	5

Table C4.1: Statistics and results – steel failure of connection channel/anchor, according to 2.2.2.2

Anchor channel /channel bolt	Nominal tensile strength of channel back f_{uk} [N/mm ²]	Actual tensile strength of channel back $f_{u,test}$ [N/mm ²]	Nominal thickness of channel back or channel lip depending on the failure mode $t_{ch,nom}$ [mm]	Actual thickness of channel back or channel lips depending on the failure mode $t_{ch,test}$ ¹⁾ [mm]	5%-fractile of ultimate load $N_{Rk,s,c,test}$ [kN]	Characteristic resistance of the connection anchor/channel $N_{Rk,s,c}$ [kN]
50/30 M12 8.8	550	570	3	3,3	35,3	31,0
52/34 M20 8.8	430	461	5	5,3	106,1	93,4

Table C4.2: Steel failure of the connection to channel/anchor under tension load according to 2.2.2.2

PreConTech anchor channel PTA 50/30 and 52/34	Annex C4
Steel failure	



Anchor channel	Channel bolt		$N_{Rk,s}$ [kN]	Characteristic resistance of the channel bolt $V_{Rk,s}$ [kN]
Dimensions	Material	Diameter [mm]		
50/30	8.8	12	67,4	33,7
		16	94,7	47,3
		20	111,9	56,0

Table C5.1: Steel failure of the channel bolt under shear load, according to 2.2.3.1

anchor channel	Channel bolt	Characteristic bending resistance $M_{Rk,s}^0$ [Nmm]	$0,5 \cdot N_{Rk,s,l} \cdot a$ [Nmm]	$M_{Rk,s}^0 \leq 0,5 \cdot N_{Rk,s,l} \cdot a$	$0,5 \cdot N_{Rk,s} \cdot a$ [Nmm]	$M_{Rk,s}^0 \leq 0,5 \cdot N_{Rk,s} \cdot a$
	Diameter [mm]					
50/30	12	104640	459317,5	Y	1000360,0	Y
	16	265920	412869,7	Y	1262626,5	Y
	20	433513	433513,2	N	1567207,4	Y
52/34	12	104640	1384746,7	Y	1000360,0	Y
	16	265920	1244716,1	Y	1262626,5	Y
	20	519360	1306951,9	Y	1567207,4	Y

Table C5.2: Steel failure by bending of the channel bolt under shear load with lever arm, according to 2.2.3.3

PreConTech anchor channel PTA 50/30 and 52/34	Annex C5
Steel failure	

ALLGEMEINE GESCHÄFTSBEDINGUNGEN

1 Geltungsbereich

- 1.1 Nachstehende Bedingungen gelten für alle unsere Angebote, Verträge, Lieferungen und sonstigen Leistungen.
- 1.2 Abweichende Vereinbarungen, sowie Geschäftsbedingungen des Kunden haben nur Gültigkeit, wenn sie in jedem Einzelfall von uns schriftlich bestätigt werden. Das gilt auch für Vereinbarungen, die mit unseren Mitarbeitern im Außendienst getroffen werden.
- 1.3 Die Gültigkeit der allgemeinen Geschäftsbedingungen wird durch die etwaige Unwirksamkeit einzelner Bestimmungen nicht berührt.
- 1.4 Der Auftraggeber erkennt spätestens bei Auftragserteilung diese Geschäftsbedingungen uneingeschränkt an.

2 Angebote/Preise

- 2.1 Unsere Angebote sind freibleibend. Jedes Geschäft kommt erst durch unsere schriftliche Auftragsbestätigung oder durch die Ausführung des Auftrages zustande.
- 2.2 Alle Nebenabreden, insbesondere auch Abmachungen, Auskünfte, Empfehlungen, Ratschläge unserer Außendienstmitarbeiter, bedürfen der schriftlichen Bestätigung des Werkes um Gültigkeit zu erlangen.
- 2.3 Die in unseren Merkblättern und sonstigen Unterlagen enthaltenen Angaben über unsere Produkte und Leistungen sind unverbindlich, sofern sie nicht ausdrücklich Gewähr übernommen wird.
- 2.4 Wir behalten uns vor, bei einer Erhöhung von Material- und Rohstoffpreisen, Löhnen und Gehältern, Herstellungs- und Transportkosten, die am Tag der Lieferung gültigen Preise zu berechnen.
- 2.5 Unsere Preise verstehen sich, sofern nicht ausdrücklich anders vereinbart, rein netto.

3 Lieferungen und Leistungen

- 3.1 Die Lieferung erfolgt an den vom Auftraggeber genannten Ort.
- 3.2 Wir sind zu Teillieferungen berechtigt.
- 3.3 Lieferung und Verpackung geht zu Lasten des Käufers. Versandart und Versandweg werden von uns gewählt, wobei nach Möglichkeit die für den Kunden günstigste berücksichtigt wird.
- 3.4 Wurde ausdrücklich Lieferung frei Baustelle oder Lager vereinbart, ist darunter Anlieferung auf befestigter Straße ohne Abladen zu verstehen. Das Abladen ist dann umgehend mit Arbeitskräften des Auftraggebers vorzunehmen.
- 3.5 Die Gefahr für Untergang, Verlust oder Beschädigung von Waren, geht mit deren Absendung bzw. Übergabe an den Frachtführer, oder bei Abholung durch den Käufer, an diesen über.
- 3.6 Verzögert sich die Lieferzeit aus einem vom Hersteller zu vertretenden Umstand, ist der Auftraggeber berechtigt, nach einer Frist von 8 Wochen nach erfolgloser Ablehnungsandrohung vom Vertrag zurückzutreten.
- 3.7 Bei Verzögerung der Lieferzeit, die vom Hersteller nicht zu vertreten sind (z.B. bei Betriebsstörungen, behindert Zulieferung von Ausgangsstoffen, behördlichen Maßnahmen, Streiks und Aussperrungen), verlängert sich die Frist in angemessenem Umfang. Ansonsten sind Auftraggeber als auch Hersteller berechtigt, vom Vertrag zurückzutreten.
- 3.8 Aus dem Vorstehenden abzuleitende Rücktrittsrechte beschränken sich grundsätzlich auf noch nicht erfüllte Teile des Vertrages.
- 3.9 Schadensersatzansprüche des Auftraggebers sind ausgeschlossen, sofern nicht Vorsatz oder grobe Fahrlässigkeit des Lieferers vorliegen.

4 Rücktritt vom Vertrag

- 4.1 Tritt der Auftraggeber mit Einverständnis des Herstellers vor Fertigstellung der in Auftrag gegebenen Ware vom Vertrag zurück, so ist der Hersteller berechtigt, eine Abstandsentschädigung in Höhe 30% des Auftragswertes zu beanspruchen, es sei denn, der Auftraggeber kann nachweisen, daß der dem Hersteller durch den Rücktritt entstandene Schaden (entstandene Unkosten und entgangener Gewinn) wesentlich niedriger ist.
- 4.2 Erfolgt durch den Auftraggeber eine einseitige Vertragsauflösung nach Beginn der Fertigstellung, so kommen zur Abstandsentschädigung nach Abschnitt 4.1 die bis dahin aufgelaufenen Fertigungskosten hinzu.

5 Zahlung

- 5.1 Für Warenlieferungen erfolgt die Zahlung innerhalb 30 Tagen netto Kasse. Bei Zahlungen innerhalb von 10 Tagen gewähren wir 2% Skonto.
- 5.2 Zahlungen erfolgen in bar oder durch Scheck.
- 5.3 Werden vom Auftraggeber Zahlungstermine überschritten, so ist der Hersteller berechtigt, vom Eintritt des Verzuges an, Zinsen in Höhe von 3% über dem Diskontsatz der Deutschen Bundesbank zu berechnen, die Geltendmachung eines weiteren Schadens bleibt vorbehalten.
- 5.4 Gegen die Ansprüche des Herstellers kann der Auftraggeber mit Gegenansprüchen nur dann aufrechnen, wenn diese rechtskräftig festgestellt oder vom Hersteller nicht bestritten sind.
- 5.5 Zahlungen an Mitarbeiter des Herstellers befreien den Auftraggeber dem Hersteller gegenüber nur, wenn eine schriftliche Inkassovollmacht des Herstellers vorliegt.

6 Gewährleistung

- 6.1 Unsere Erzeugnisse werden aus erprobtem Rohstoffen nach bewährten Rezepturen hergestellt und weisen zum Zeitpunkt der Auslieferung eine einwandfreie Qualität auf.
- 6.2 Der Käufer hat die Ware unverzüglich zu prüfen und offensichtliche Mängel innerhalb von 8 Tagen schriftlich zu rügen. Der Nachweis von Mängeln obliegt dem Käufer.
- 6.3 Beanstandete Ware muß sich am Ort und im Zustand der Anlieferung befinden und darf ohne schriftliche Genehmigung des Herstellers nicht verarbeitet werden.
- 6.4 Mängel, die auf unsachgemäße Lagerung oder Verarbeitung zurückzuführen sind, werden nicht anerkannt.
- 6.5 Bei anerkannten Mängeln verpflichtet sich der Hersteller zur Ersatzlieferung nach angemessener Frist.
- 6.6 Andere Gewährleistungsansprüche stehen dem Auftraggeber nicht zu. Ist der Auftraggeber Kaufmann i. S. d. HGB, so hat er nach fehlgeschlagener Ersatzlieferung nur das Recht zur Minderung.

7 Eigentumsvorbehaltssicherung

- 7.1 Bis zur vollständigen Bezahlung aller unserer Forderungen aus der Geschäftsbedingung mit dem Käufer bleiben die verkauften Waren unser Eigentum. Der Käufer ist befugt, über die gekaufte Ware im ordnungsgemäßen Geschäftsgang zu verfügen.
- 7.2 Bei vertragswidrigem Verhalten des Bestellers, insbesondere bei Zahlungsverzug, sind wir berechtigt, unsere Ware zurück zunehmen. In der Zurücknahme der Kaufsache durch uns liegt kein Rücktritt vom Vertrag, es sei denn, wir hätten dies ausdrücklich schriftlich erklärt. Wir sind nach Rücknahme der Kaufsache zu deren Verwertung befugt. Der Verwendungserlös ist auf die Verbindlichkeit des Bestellers abzüglich angemessener Verwertungskosten anzurechnen.
- 7.3 Der Eigentumsvorbehalt erstreckt sich auf die durch Verarbeitung, Vermischung oder Verbindung unserer Ware entstehenden Erzeugnisse zu deren vollem Wert, wobei wir als Hersteller gelten. Bleibt bei einer Verarbeitung, Vermischung oder Verbindung mit Waren Dritter deren Eigentumsrecht bestehen, so erwerben wir Miteigentum im Verhältnis der Rechnungswerte der verarbeiteten Ware.
- 7.4 Die aus dem Weiterverkauf entstehenden Forderungen gegen Dritte tritt der Käufer schon jetzt insgesamt bzw. in Höhe unseres etwaigen Miteigentumsanteils zur Sicherung an uns ab. Er ist ermächtigt, diese bis zu Widerruf oder zur Einstellung seiner Zahlung längstens bis zur Stellung eines Konkurs-/Insolvenzantrages an uns für unsere Rechnung einzuziehen. Zur Abtretung dieser Forderung ist der Käufer nicht, auch nicht zum Zwecke der Forderungseinziehung im Wege des Factorings, befugt. Etwas anderes gilt nur dann, wenn gleichzeitig die Verpflichtung des Factors begründet wird, die Gegenleistung in Höhe unseres Forderungsanteils solange unmittelbar an uns zu bewirken, als noch Forderungen unsererseits gegen den Käufer bestehen.
- 7.5 Zugriffe Dritter auf die uns gehörenden Waren und Forderungen sind uns vom Käufer unverzüglich schriftlich mitzuteilen.
- 7.6 Die Ware oder die an ihre Stelle tretenden Forderungen dürfen vor vollständiger Bezahlung unserer Forderung weder an Dritte verpfändet noch zur Sicherung übereignet oder abgetreten werden.
- 7.7 Wir behalten uns das Eigentum an der Kaufsache bis zum Eingang aller Zahlungen aus der Geschäftsverbindung mit dem Käufer auch dann vor, wenn wir mit dem Besteller Bezahlung der Forderung aufgrund des Scheck-Wechsel-Verfahrens vereinbart haben sollten. Der Vorbehalt erstreckt sich dann auch auf die Einlösung der von uns akzeptierten Wechsel durch den Besteller und erlischt nicht durch Gutschrift des erhaltenden Schecks bei uns.
- 7.8 Wir behalten uns auch das Eigentum vor bis zum Eingang aller Zahlungen aus einem gegebenenfalls bestehenden Kontokorrentverhältnis mit dem Kunden. Der Vorbehalt bezieht sich auf den anerkannten Saldo.
- 7.9 Übersteigt der Wert der Sicherheiten unsere Forderungen um mehr als 20%, so werden wir auf Verlangen des Käufers insoweit Sicherheiten nach unserer Wahl freigeben.

8 Erfüllungsort und Gerichtsstand

- 8.1 Erfüllungsort ist der Sitz des Werkes Trebur.
- 8.2 Gerichtsstand für alle aus dem Vertragsverhältnis, sowie über sei Entstehen und seine Wirksamkeit entspringende Rechtsstreitigkeiten (Auch für Wechsel- und Scheckklagen) mit Vollkaufleuten juristischen Person des öffentlichen Rechts oder öffentlich rechtlicher Sondervermögen ist Groß-Gerau.
- 8.3 Es ist ausschließlich das Recht der Bundesrepublik Deutschland anwendbar.

9 Geschäftsverkehr mit Nichtkaufleuten

Für Nichtkaufleute gelten diese Geschäftsbedingungen nur mit den sich aus dem AGB-Gesetz vom 09.12.1976 ergebenden Einschränkungen.

10 Schlußbestimmung

Sollten einzelne oder vorstehende Bestimmungen unwirksam sein oder werden, bleibt dadurch die Rechtswirksamkeit der übrigen unberührt. Evt. Unwirksame Bestimmungen sollen durch Regelungen ersetzt werden, die dem wirtschaftlichem Zweck des Vertrages unter angemessener Wertung der beiderseitigen Interessen am weitesten entsprechen.

TERMS OF BUSINESS

1 Scope

- 1.1 The following terms are valid for all of our offers, contracts, deliveries and other services.
- 1.2 Different agreements as well as the terms of business of the customer are only valid if confirmed by us in written form in every single case. The same is valid for agreements that are made with our salesmen who work out of the office.
- 1.3 The validity of the general terms of business will not be affected by the possible ineffectiveness of a single regulation.
- 1.4 The customer accepts these terms of business without reservation at the latest when placing an order.

2 Offers/Prices

- 2.1 Our offers are provisional. Every business deal only comes into being after we have confirmed the order in written form or through its execution.
- 2.2 All side agreements, especially agreements, information, recommendations, suggestions from our out-of-office employees, have to be endorsed in writing in order to become valid.
- 2.3 The product and service information in our leaflets and other documents is without obligation provided that it is not explicitly taken over.
- 2.4 If there is a increase in raw material cost, wages and salaries, manufacturing and shipping costs, we reserve the right to charge prices for the goods that are valid that day.
- 2.5 Our prices are, if not otherwise agreed upon, strictly net.

3 Deliveries and performances

- 3.1 Delivery will occur at the place chosen by the customer.
- 3.2 We are entitled to deliver partly.
- 3.3 Shipment and packing will be charged to the customer's expense. Type of carriage and way of carriage will be chosen by us, whereby the cheapest possibility for the customer will be considered.
- 3.4 If it is explicitly agreed upon that the delivery is free construction site or warehouse, it means that the delivery will occur on a made up road without unloading of the goods.
- 3.5 The danger of sinking, loss or damage of goods becomes business of the carrier when the goods are despatched
- 3.6 If the delivery time should be delayed due to a circumstance caused by the manufacturer, the customer has the right to step back from the contract after a time period of 8 weeks after unsuccessful threat of rejection.
- 3.7 In the case of a delay of delivery which is not caused by the manufacturer (e.g. malfunction, hindered delivery of raw materials, official regulations, strikes and lock outs) the deadline will be extended appropriately. Otherwise the customer as well as the manufacturer are entitled to step back from the contract.
- 3.8 The right to withdraw from the contract is restricted to the parts of the contract that have not been fulfilled yet.
- 3.9 Entitlements for damages for the customer are out of question, provided that there is no intention or negligence on the part of the supplier.

4 Withdrawal from contract

- 4.1 If the customer withdraws from the contract before the manufacturing of the goods, and the manufacturer agrees with the customer, a compensation of 30% of the total value of the order can be claimed. This cannot be done if the customer can proof that the damage for the manufacturer after the withdrawal (expenses and missing of profit) are fundamentally lower.
- 4.2 Should the customer cancel the contract after the manufacturing of the goods has started, the production costs up to that moment are added to the compensation payments according to section 4.1.

5 Payment

- 5.1 For delivery of the goods payment within 30 days, net has to take place. We allow a 2% discount if payment is made in cash within 10 days.
- 5.2 Payments occur cash or with cheque.
- 5.3 Should the payment deadlines be exceeded by the customer, the manufacturer reserves the right to charge interest of 3% over the discount rate of the Deutsche Bundesbank starting at the occurrence of the delay in payment. The assertion of further damage is reserved.
- 5.4 The customer can only charge counter demands against the demands of the manufacturer if they are legally established or not denied by the manufacturer.
- 5.5 Payments to employees of the manufacturer release the customer from his duty only if a written collection authority exists.

6 Guarantee

- 6.1 Our products are manufactured from tested raw material following proven recipes and have flawless quality at the point of shipment.
- 6.2 The customer has to check the goods immediately and complain about obvious defects in written form within 8 days. The proof of the defects is the responsibility of the customer.
- 6.3 Objected goods have to be at the place where they were delivered and in the condition they were delivered and cannot be used without a written authorization of the manufacturer.
- 6.4 Defects that can be traced back to improper storage or use will not be accepted.
- 6.5 If the defects are acknowledged the manufacturer is obligated to a replacement after an appropriate amount of time.
- 6.6 The customer is not entitled to other guaranteed claims.

7 Entitlement to reservation of proprietary rights

- 7.1 The goods remain ours until full payment of all of our claims by the customer. The buyer is entitled to decide what to do with the purchased goods in accordance with the regulations of the business.
- 7.2 If the customer breaches the contract, especially regarding delay in payment, we are authorized to take back our goods. We do not breach the contract if we take back the goods, except in the case where a written statement by us exists. We are authorized to decide on the further use of the returned goods. The proceeds are to be taken into account into the liabilities of the customer minus reasonable utilization costs.
- 7.3 The reservation of proprietary rights applies to goods that result from the processing, mixing or a combination with our goods to their full worth whereby we are seen as the manufacturer. If during processing, mixing or a combination with goods of a third party the reservation of proprietary rights of that third party are affective, we are co-owners according to the invoice amount of the processed goods.
- 7.4 Demands against third parties that originate from a resale are being transferred to us.
- 7.5 If a third person takes hold of our goods or demands, the buyer has to notify us immediately in writing.
- 7.6 The goods or the demands that are made in their place cannot be pawned to a third party nor transferred before the total payment of our demands.
- 7.7 If the value of the securities exceeds our claims by more than 20%, we will lift controls over securities according to our choice if the buyer demands it.

8 Place of performance

- 8.1 Place of performance is Trebur, Germany.
- 8.2 Place of jurisdiction is Groß Gerau, Germany.
- 8.3 The court of law is situated in Groß Gerau.
- 8.4 Only the law of the Republic of Germany is applicable.

9 Business dealings with non-business people

These terms of business apply for non-business people only with the restrictions that arise from the AGB law dated 09.12.1976.

10 Concluding remark

Should single or the above mentioned regulations be or become ineffective, the legal validity of the other regulations will not be affected. Possible invalid regulations should be replaced by regulations that best comply with the economical purpose of the contract and represent the interest of both parties.



Beckerweg 6
D-65468 Trebur

fon +49 61 47.91 39-20
fax +49 61 47.91 39-29

info@precontech.net
www.precontech.net