

TP THROUGH BOLT ANCHORS

TP Cracked Concrete Anchor - TP CCA+ - Option 1

■ Characteristics

- TP CCA+ is used in cracked and non-cracked concrete
- European Technical Approval (ETA) Option 1
- Approved for fire resistance R30 to R120
- Use for seismic loads
- Used for medium loads, static or quasi-static loads
- TP CCA+ has roughness working principle. Easy to install by using a controlled torque
- Available in galvanized carbon steel and sherardized
- Easy installation
- TP CCA+ is used in dry conditions
- Available in variety of lengths and sizes, assembly flexibility. Size range M6 – M24



■ Application

- TP CCA+ is used in Structural applications in cracked concrete applications
- Uses to fix safety fences, sprinklers, channels, machinery, boilers, signals, steel beams, wood structures to concrete, etc.

■ TP CCA+ (Galvanized)



Item Number	Description	Size*	Approval
TP 11250	TP CCA+ Option 1 - Cracked Concrete	M8x50	
TP 11251	TP CCA+ Option 1 - Cracked Concrete	M8x75	ETA
TP 11252	TP CCA+ Option 1 - Cracked Concrete	M8x95	ETA
TP 11253	TP CCA+ Option 1 - Cracked Concrete	M8x115	ETA
TP 11254	TP CCA+ Option 1 - Cracked Concrete	M10x90	ETA
TP 11255	TP CCA+ Option 1 - Cracked Concrete	M10x105	ETA
TP 11256	TP CCA+ Option 1 - Cracked Concrete	M10x115	ETA
TP 11257	TP CCA+ Option 1 - Cracked Concrete	M10x135	ETA
TP 11258	TP CCA+ Option 1 - Cracked Concrete	M10x165	ETA
TP 11259	TP CCA+ Option 1 - Cracked Concrete	M10x185	ETA
TP 11260	TP CCA+ Option 1 - Cracked Concrete	M12x80	
TP 11261	TP CCA+ Option 1 - Cracked Concrete	M12x100	ETA
TP 11262	TP CCA+ Option 1 - Cracked Concrete	M12x110	ETA
TP 11263	TP CCA+ Option 1 - Cracked Concrete	M12x120	ETA
TP 11264	TP CCA+ Option 1 - Cracked Concrete	M12x130	ETA
TP 11265	TP CCA+ Option 1 - Cracked Concrete	M12x150	ETA
TP 11266	TP CCA+ Option 1 - Cracked Concrete	M12x180	ETA
TP 11267	TP CCA+ Option 1 - Cracked Concrete	M12x200	ETA
TP 11268	TP CCA+ Option 1 - Cracked Concrete	M16x145	ETA
TP 11269	TP CCA+ Option 1 - Cracked Concrete	M16x175	ETA
TP 11270	TP CCA+ Option 1 - Cracked Concrete	M16x220	ETA
TP 11271	TP CCA+ Option 1 - Cracked Concrete	M16x250	ETA
TP 11272	TP CCA+ Option 1 - Cracked Concrete	M20x170	ETA
TP 11273	TP CCA+ Option 1 - Cracked Concrete	M20x200	ETA
TP 11274	TP CCA+ Option 1 - Cracked Concrete	M24x205	ETA
TP 11275	TP CCA+ Option 1 - Cracked Concrete	M24x235	ETA

*(Diameter) x (Length) - mm

■ TP CCA-G+ (Sherardized)



Item Number	Description	Size*	Approval
TP 11300	TP CCA-G+ Option 1 - Cracked Concrete	M6x60	
TP 11301	TP CCA-G+ Option 1 - Cracked Concrete	M6x70	
TP 11302	TP CCA-G+ Option 1 - Cracked Concrete	M6x100	
TP 11303	TP CCA-G+ Option 1 - Cracked Concrete	M8x50	
TP 11304	TP CCA-G+ Option 1 - Cracked Concrete	M8x60	
TP 11305	TP CCA-G+ Option 1 - Cracked Concrete	M8x75	ETA
TP 11306	TP CCA-G+ Option 1 - Cracked Concrete	M8x95	ETA
TP 11307	TP CCA-G+ Option 1 - Cracked Concrete	M8x115	ETA
TP 11308	TP CCA-G+ Option 1 - Cracked Concrete	M10x70	
TP 11309	TP CCA-G+ Option 1 - Cracked Concrete	M10x90	ETA
TP 11310	TP CCA-G+ Option 1 - Cracked Concrete	M10x105	ETA
TP 11311	TP CCA-G+ Option 1 - Cracked Concrete	M10x115	ETA
TP 11312	TP CCA-G+ Option 1 - Cracked Concrete	M10x135	ETA
TP 11313	TP CCA-G+ Option 1 - Cracked Concrete	M10x165	ETA
TP 11314	TP CCA-G+ Option 1 - Cracked Concrete	M10x185	ETA
TP 11315	TP CCA-G+ Option 1 - Cracked Concrete	M12x80	
TP 11316	TP CCA-G+ Option 1 - Cracked Concrete	M12x110	ETA
TP 11317	TP CCA-G+ Option 1 - Cracked Concrete	M12x130	ETA
TP 11318	TP CCA-G+ Option 1 - Cracked Concrete	M12x150	ETA
TP 11319	TP CCA-G+ Option 1 - Cracked Concrete	M12x180	ETA
TP 11320	TP CCA-G+ Option 1 - Cracked Concrete	M12x200	ETA
TP 11321	TP CCA-G+ Option 1 - Cracked Concrete	M16x125	ETA
TP 11322	TP CCA-G+ Option 1 - Cracked Concrete	M16x145	ETA
TP 11323	TP CCA-G+ Option 1 - Cracked Concrete	M16x175	ETA
TP 11324	TP CCA-G+ Option 1 - Cracked Concrete	M16x220	ETA
TP 11325	TP CCA-G+ Option 1 - Cracked Concrete	M20x170	ETA
TP 11326	TP CCA-G+ Option 1 - Cracked Concrete	M20x200	ETA

*(Diameter) x (Length) - mm

■ TP CCA-X+ (Galvanized)



Item Number	Description	Size*	Approval
TP 11400	TP CCA-X+ Option 1 - Cracked Concrete	M8x50	
TP 11401	TP CCA-X+ Option 1 - Cracked Concrete	M8x75	ETA
TP 11402	TP CCA-X+ Option 1 - Cracked Concrete	M8x95	ETA
TP 11403	TP CCA-X+ Option 1 - Cracked Concrete	M8x115	ETA
TP 11404	TP CCA-X+ Option 1 - Cracked Concrete	M10x90	ETA
TP 11405	TP CCA-X+ Option 1 - Cracked Concrete	M10x105	ETA
TP 11406	TP CCA-X+ Option 1 - Cracked Concrete	M10x115	ETA
TP 11407	TP CCA-X+ Option 1 - Cracked Concrete	M10x135	ETA
TP 11408	TP CCA-X+ Option 1 - Cracked Concrete	M10x165	ETA
TP 11409	TP CCA-X+ Option 1 - Cracked Concrete	M10x185	ETA
TP 11410	TP CCA-X+ Option 1 - Cracked Concrete	M12x80	
TP 11411	TP CCA-X+ Option 1 - Cracked Concrete	M12x100	ETA
TP 11412	TP CCA-X+ Option 1 - Cracked Concrete	M12x110	ETA
TP 11413	TP CCA-X+ Option 1 - Cracked Concrete	M12x120	ETA
TP 11414	TP CCA-X+ Option 1 - Cracked Concrete	M12x130	ETA
TP 11415	TP CCA-X+ Option 1 - Cracked Concrete	M12x150	ETA
TP 11416	TP CCA-X+ Option 1 - Cracked Concrete	M12x180	ETA
TP 11417	TP CCA-X+ Option 1 - Cracked Concrete	M12x200	ETA
TP 11418	TP CCA-X+ Option 1 - Cracked Concrete	M16x145	ETA
TP 11419	TP CCA-X+ Option 1 - Cracked Concrete	M16x175	ETA
TP 11420	TP CCA-X+ Option 1 - Cracked Concrete	M16x220	ETA
TP 11421	TP CCA-X+ Option 1 - Cracked Concrete	M16x250	ETA
TP 11422	TP CCA-X+ Option 1 - Cracked Concrete	M20x170	ETA
TP 11423	TP CCA-X+ Option 1 - Cracked Concrete	M20x200	ETA

*(Diameter) x (Length) - mm

■ Installation Parameters – TP CCA+



Item Number	Drill bit diameter	Torque	Minimum concrete thickness	Depth of drill hole \geq	Installation depth	Effective anchorage depth	Thickness of fixture \leq	Critical spacing	Critical edge distance	Minimum allowable spacing	Minimum allowable edge distance
	do (mm)	Tinst [Nm]	hmin (mm)	h1 (mm)	hnom (mm)	hef (mm)	tfix (mm)	Scr (mm)	Ccr (mm)	Smin (mm)	Cmin (mm)
TP 11250	8	20	100	40	37	30	2	144	72	50	50
TP 11251				60	55	48	9				
TP 11252				60	55	48	29				
TP 11253				60	55	48	49				
TP 11254	10	40	120	75	68	60	10	180	90	60	60
TP 11255							25				
TP 11256							35				
TP 11257							55				
TP 11258							85				
TP 11259							105				
TP 11260	12	60	100	65	60	50	4	210	105	70	70
TP 11261			140	85	80	70	4				
TP 11262			140	85	80	70	14				
TP 11263			140	85	80	70	24				
TP 11264			140	85	80	70	34				
TP 11265			140	85	80	70	54				
TP 11266			140	85	80	70	84				
TP 11267			140	85	80	70	104				
TP 11268	16	100	170	105	97	85	28	255	128	85	85
TP 11269							58				
TP 11270							103				
TP 11271							133				
TP 11272	20	200	200	125	114	100	32	300	150	100	100
TP 11273							62				
TP 11274	24	250	250	155	143	125	35	375	188	125	125
TP 11275							65				

■ Characteristic Resistance – TP CCA+



Characteristic resistances for C20/25 concrete for an isolated anchor (without considering anchor-to-anchor or anchor-to-edge distance effects).

Item Number	Letter on head tip	Tension resistance in C20/25 concrete		Coefficient for higher concrete resistances			Tension partial safety coefficient	Shear resistance		Shear partial safety coefficient						
		Uncracked NRk [kN]	cracked NRk [kN]	C30/37 Ψ [-]	C40/45 Ψ [-]	C50/60 Ψ [-]	γ_M [-]	Uncracked VRk [kN]	Cracked VRk [kN]	Uncracked γ_M [-]	Cracked γ_M [-]					
TP 11250	A	4.50	3.20	1.22	1.41	1.55	1.80	8.30	5.90	1.50	1.50					
TP 11251	C	9.00	5.00					1.22	1.41	1.55		1.80	11.00	12.00	1.25	
TP 11252	E															
TP 11253	G	16.00	9.00	1.16	1.31	1.41	1.50	17.40	17.40	1.25	1.25					
TP 11254	E															
TP 11255	F															
TP 11256	G															
TP 11257	H															
TP 11258	K															
TP 11259	L															
TP 11260	D	12.00	8.00	1.22	1.41	1.55	1.50	25.30	25.40	1.25	1.25					
TP 11261	E	20.00	12.00						1.22			1.41	1.55	1.50	25.30	25.30
TP 11262	F															
TP 11263	G															
TP 11264	H															
TP 11265	I															
TP 11266	L															
TP 11267	M															
TP 11268	I	35.00	25.00	1.22	1.41	1.55	1.50	47.10	56.40	1.25	1.50					
TP 11269	K															
TP 11270	O															
TP 11271	Q	50.00	30.00	1.16	1.31	1.41	1.50	73.10	72.00	1.25	1.50					
TP 11272	K															
TP 11273	M															
TP 11274	N															
TP 11275	P															

■ Characteristic Resistance for seismic performance C1 & C2 – TP CCA+



Item Number	Letter on head tip	Tension resistance in C20/25 concrete		Coefficient for higher concrete resistances			Tension partial safety coefficient		Shear resistance		Shear partial safety coefficient
		C1 NRk,P,seis	C2 NRk [kN]	C30/37 ψ [-]	C40/45 ψ [-]	C50/60 ψ [-]	C1 γ_M [-]	C2 γ_M [-]	C1 VRk [kN]	C2 VRk [kN]	C1/C2 γ_M [-]
TP 11254	E	5.30	-	1.16	1.31	1.41	1.50	-	12.20	-	1.25
TP 11255	F										
TP 11256	G										
TP 11257	H										
TP 11258	K										
TP 11259	L										
TP 11261	E	8.40	5.20	1.22	1.41	1.55	1.50	1.50	17.80	17.80	1.25
TP 11262	F										
TP 11263	G										
TP 11264	H										
TP 11265	I										
TP 11266	L										
TP 11267	M										
TP 11268	I										
TP 11269	K	17.50	8.90	1.22	1.41	1.55	1.50	1.50	33.00	33.00	1.25
TP 11270	O										
TP 11271	Q										

■ Calculation example

Fixing a tension load of 500 kg (= 4.91 kN) in C30/37 cracked concrete using a TP CCA+ M10 anchor.

Calculation: A load safety factor of $\gamma_F = 1.4$ is recommended

Verification to be performed: Design load < Design resistance | Design load = service load * load safety factor = 4.91 * 1.4 = 6.87 kN

Design resistance = characteristic resistance * concrete coefficient / tension partial safety coefficient = 9 * 1.16 / 1.5 = 6.96 kN

Verification: 6.87 < 6.96 kN

Result: The fixing is safe.

■ Installation Parameters-TPCCA-G+



Item Number	Drill bit diameter	Torque	Minimum concrete thickness	Depth of drill hole \geq	Installation depth	Effective anchorage depth	Thickness of fixture \leq	Critical spacing	Critical edge distance	Minimum allowable spacing	Minimum allowable edge distance
	do (mm)	Tinst [Nm]	hmin (mm)	h1 (mm)	hnom (mm)	hef (mm)	tfix (mm)	Scr (mm)	Ccr (mm)	Smin (mm)	Cmin (mm)
TP 11300	6	7	100	50	46	40	10	120	60	40	40
TP 11301							20				
TP 11302							50				
TP 11303	8	15	100	40	37	30	2	144	72	50	50
TP 11304				12							
TP 11305				60	55	48	9				
TP 11306				29							
TP 11307				49							
TP 11308	10	40	100	60	53	45	5	180	90	60	60
TP 11309			10								
TP 11310			25								
TP 11311			120	75	68	60	35				
TP 11312			55								
TP 11313			85								
TP 11314			105								
TP 11315	12	60	100	65	60	4	210	105	70	70	
TP 11316			14								
TP 11317			140	85	80	70					34
TP 11318			54								
TP 11319			84								
TP 11320			104								
TP 11321	16	100	170	105	97	85	8	255	128	128	128
TP 11322							28				
TP 11323							58				
TP 11324							103				
TP 11325	20	200	200	125	114	100	32	300	150	150	150
TP 11326							62				

■ Characteristic Resistance – TPCCA-G+



Characteristic resistances for C20/25 concrete for an isolated anchor (without considering anchor-to-anchor or anchor-to-edge distance effects).

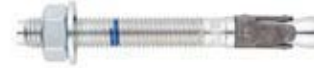
Item Number	Letter on head tip	Tension resistance in C20/25 concrete		Coefficient for higher concrete resistances			Tension partial safety coefficient	Shear resistance		Shear partial safety coefficient	
		Uncracked NRk [kN]	Cracked NRk [kN]	C30/37 Ψ [-]	C40/45 Ψ [-]	C50/60 Ψ [-]	γ_M [-]	Uncracked VRk [kN]	Cracked VRk [kN]	Uncracked γ_M [-]	Cracked γ_M [-]
TP 11300	B	6.00	-	1.22	1.41	1.55	1.80	6.00	-	1.25	-
TP 11301	C										
TP 11302	E										
TP 11303	A	4.50	3.20	1.22	1.41	1.55	1.80	8.30	5.90	1.50	1.50
TP 11304	B										
TP 11305	C	9.00	6.00	1.22	1.41	1.55	1.80	11.00	12.00	1.25	1.50
TP 11306	E										
TP 11307	G										
TP 11308	C	6.70	4.80	1.16	1.31	1.41	1.50	17.40	17.40	1.25	1.25
TP 11309	E										
TP 11310	F										
TP 11311	G	16.00	9.00	1.16	1.31	1.41	1.50	17.40	17.40	1.25	1.25
TP 11312	H										
TP 11313	K										
TP 11314	L										
TP 11315	D	12.00	8.00	1.16	1.31	1.41	1.50	25.40	25.40	1.25	1.50
TP 11316	F										
TP 11317	H	30.00	16.00	1.22	1.41	1.55	1.50	25.30	25.30	1.25	1.25
TP 11318	I										
TP 11319	L										
TP 11320	M										
TP 11321	G	35.00	25.00	1.22	1.41	1.55	1.50	47.10	56.40	1.25	1.50
TP 11322	I										
TP 11323	K										
TP 11324	O										
TP 11325	K	50.00	30.00	1.16	1.31	1.41	1.50	73.10	72.00	1.25	1.50
TP 11326	M										

■ Installation Parameters – TP CCA-X+



Item Number	Drill bit diameter	Torque	Minimum concrete thickness	Depth of drill hole \geq	Installation depth	Effective anchorage depth	Thickness of fixture \leq	Critical spacing	Critical edge distance	Minimum allowable spacing	Minimum allowable edge distance
	do (mm)	Tinst [Nm]	hmin (mm)	h1 (mm)	hnom (mm)	hef (mm)	tfix (mm)	Scr (mm)	Ccr (mm)	Smin (mm)	Cmin (mm)
TP 11400	8	15	100	40	37	30	2	144	72	50	50
TP 11401				60	55	48	9				
TP 11402				60	55	48	29				
TP 11403				60	55	48	49				
TP 11404	10	40	100	60	53	45	5	180	90	60	60
TP 11405			60	53	45	25					
TP 11406			60	53	45	35					
TP 11407			60	53	45	55					
TP 11408			60	53	45	85					
TP 11409			60	53	45	105					
TP 11410	12	60	100	65	60	50	4	210	105	70	70
TP 11411			65	60	50	4					
TP 11412			65	60	50	14					
TP 11413			65	60	50	24					
TP 11414			65	60	50	34					
TP 11415			65	60	50	54					
TP 11416			65	60	50	84					
TP 11417			65	60	50	104					
TP 11418	65	60	50	28							
TP 11419	16	100	170	105	97	85	58	255	128	128	128
TP 11420							103				
TP 11421							133				
TP 11422	20	200	200	125	114	100	32	300	150	150	150
TP 11423							62				

■ Characteristic Resistance – TP CCA-X+



Characteristic resistances for C20/25 concrete for an isolated anchor (without considering anchor-to-anchor or anchor-to-edge distance effects).

Item Number	Letter on head tip	Tension resistance in C20/25 concrete		Coefficient for higher concrete resistances			Tension partial safety coefficient	Shear resistance		Shear partial safety coefficient					
		Uncracked NRk [kN]	Cracked NRk [kN]	C30/37 Ψ [-]	C40/45 Ψ [-]	C50/60 Ψ [-]	γ_M [-]	Uncracked VRk [kN]	Cracked VRk [kN]	Uncracked γ_M [-]	Cracked γ_M [-]				
TP 11400	A	4.50	3.20	1.22	1.41	1.55	1.80	8.30	5.90	1.50	1.50				
TP 11401	C	9.00	6.00					1.22	1.41	1.55		1.80	11.00	12.00	1.25
TP 11402	E												16.00	9.00	1.16
TP 11403	G	16.00	9.00	1.16	1.31	1.41	1.50	17.40	17.40	1.25					
TP 11404	E										16.00	9.00	1.16	1.31	1.41
TP 11405	F	16.00	9.00	1.16	1.31	1.41	1.50	17.40	17.40	1.25					
TP 11406	G										16.00	9.00	1.16	1.31	1.41
TP 11407	H	16.00	9.00	1.16	1.31	1.41	1.50	17.40	17.40	1.25					
TP 11408	K										16.00	9.00	1.16	1.31	1.41
TP 11409	L	16.00	9.00	1.16	1.31	1.41	1.50	17.40	17.40	1.25					
TP 11410	D										12.00	8.00	1.22	1.41	1.55
TP 11411	E	25.00	16.00	1.22	1.41	1.55	1.50	25.30	25.30	1.25					
TP 11412	F										25.00	16.00			
TP 11413	G	25.00	16.00	1.22	1.41	1.55	1.50	25.30	25.30	1.25					
TP 11414	H										25.00	16.00	1.22	1.41	1.55
TP 11415	I	25.00	16.00	1.22	1.41	1.55	1.50	25.30	25.30	1.25					
TP 11416	L										25.00	16.00	1.22	1.41	1.55
TP 11417	M	25.00	16.00	1.22	1.41	1.55	1.50	25.30	25.30	1.25					
TP 11418	I										35.00	25.00	1.22	1.41	1.55
TP 11419	K	35.00	25.00	1.22	1.41	1.55	1.50	47.10	56.40	1.25					
TP 11420	O										35.00	25.00	1.22	1.41	1.55
TP 11421	Q	35.00	25.00	1.22	1.41	1.55	1.50	47.10	56.40	1.25					
TP 11422	K										50.00	30.00	1.16	1.31	1.41
TP 11423	M	50.00	30.00	1.16	1.31	1.41	1.50	73.10	72.00	1.25					

■ Characteristic Resistance for seismic performance C1 & C2 – TP CCA-X+



Item Number	Letter on head tip	Tension resistance in C20/25 concrete		Coefficient for higher concrete resistances			Tension partial safety coefficient		Shear resistance		Shear partial safety coefficient
		C1 NRk,P,seis	C2 NRk [kN]	C30/37 ψ [-]	C40/45 ψ [-]	C50/60 ψ [-]	C1 γ_M [-]	C2 γ_M [-]	C1 VRk [kN]	C2 VRk [kN]	C1/C2 γ_M [-]
TP 11404	E	3.90	-	1.16	1.31	1.41	1.50	-	12.20	-	1.25
TP 11405	F										
TP 11406	G										
TP 11407	H										
TP 11408	K										
TP 11409	L										
TP 11410	D										
TP 11411	E										
TP 11412	F										
TP 11413	G	16.00	9.10	1.22	1.41	1.55	1.50	1.50	17.80	17.80	1.25
TP 11414	H										
TP 11415	I										
TP 11416	L										
TP 11417	M										
TP 11418	I										
TP 11419	K	25.00	-	1.22	1.41	1.55	1.50	1.50	33.00	-	1.25
TP 11420	O										
TP 11421	Q										
TP 11422	K										
TP 11423	M	30.00	21.00	1.16	1.31	1.41	1.50	1.50	58.50	58.50	1.25

■ Anchor Material

No.	Designation	TP CCA+	TP CCA-G+	TP CCA-X+
1	Anchor Body	Carbon steel, galvanized $\geq 5 \mu\text{m}$	Carbon steel, sherardized $\geq 40 \mu\text{m}$	Carbon steel, galvanized $\geq 5 \mu\text{m}$
2	Expansion Clip	A4 stainless steel	A4 stainless steel	Carbon steel, sherardized $\geq 40 \mu\text{m}$
3	Nut	DIN 934, galvanized $\geq 5 \mu\text{m}$	DIN 934, sherardized $\geq 40 \mu\text{m}$	DIN 934, galvanized $\geq 5 \mu\text{m}$
4	Washer	DIN 125, DIN 9021, galvanized $\geq 5 \mu\text{m}$	DIN 125, DIN 9021, sherardized $\geq 40 \mu\text{m}$	DIN 125, DIN 9021, galvanized $\geq 5 \mu\text{m}$

■ Installation Procedure

- Check the concrete base is compact and porosity is insignificant. Drill to the specified diameter and depth values.
Note: Use drill in hammer mode
- Clean the drill holes completely with an air pump and brush to clear all the dust and fragments
- With the help of a hammer, insert the anchor in the hole until the red ring mark is flat with concrete surface.
The installation could be done through the fixture baseplate
- Apply nominal installation torque using a torque wrench. Once installed it can be verified the total length of the anchor through the letter on bolt tip

