TEAM PRO

GENERAL CATALOGUE

COMPANY PROFILE

TEAM PRO SOFTWARE PROGRAMS

SOFTWARE PROGRAMS

Profix 1.2 Software

Profix 1.2 is the right solution to your needs in anchoring fixation: a quick, safe, and practical calculation software useful for technicians to plan the use of different products in different situations:

- Fixing design subject to different loads
- Fixing design of single anchor or group of anchors

Rebar Theory Software

Works according to rebar theory to determine the following:

- Anchorage length
- Overlap joint

Volume Calculator Software

An easy and fast way to get the quantity of chemical anchors needed for a project

TP Firestop Software

This software has many features:

- For a simple and fast method to identify the UL System and Firestop products
- The Q&A section will ask a few questions to customize your search and quickly find the appropriate UL system
- The submittal section enables you to personalize each submittal job with specified systems, Product Data Sheet, MSDS
- The volume calculation allows you to quickly find the volume of Firestop product needed for a given application

TP MEPtek Software

Design the pipe & duct supporting systems in a suitable manner that can eliminate fatigue

Contain a graphical representation of the pipe & duct runs supported by Team Pro's products

Select the perfect size of the elements (channel, threaded rod, anchor, etc.) used to support the pipe and duct runs depending on the calculation of moment, deflection, bending stress & tensile stress while using Macaulay's principle

Provide a report that displays all the calculations, with the help of a clear moment and deflection diagram for the selected channel

Supply parts list that summaries all applied products in supporting the pipe and duct runs

Design instantly any complicated case that helps engineers be more effective and efficient

All Team Pro Software Programs: available at www.team-pro.com

CHEMICAL ANCHORS

TP E SD+

Reaction Resin Mortar Based On Pure Epoxy

Product Description

The TP E SD+ mortar is a 2-component reaction resin mortar based on a pure epoxy and will be delivered in an exclusive 2-C cartridge system.

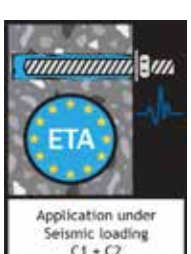
This high performance product may be used in combination with a hand-, battery-, or pneumatic tool and a static mixer. It was designed
especially for the anchoring of threaded rods, reinforcing bars or internal threaded anchor rod into concrete (also porous and light).

The TP E SD+ mortar product is characterized, by a huge range of applications with an installtion temperature from +0°C and a service temperature up to 72°C as well as by high chemical resistance for applications in extreme ambiences e.g. in swimming pools (chlorine) or closeness to the sea (salt).

The wide range of certificates, national and international approvals, allows nearly every application.

Item Number	Description	Size
TP 1155-1	TP ESD+ Pure Epoxy with one Ring Mixer + Extension	585ml

Approvals / Certificates



Certified to
NSF/ANSI/CAN 61

Properties and Benefits

- European Assessment acc. to EAD 330499-01-0601 (Option 1, Annex E - TR 049, Seismic C1 and C2): ETA-21/0172
- European Assessment acc. to EAD 330499-01-0601 (Annex C - Additional provisions for working life of 100 years): ETA-21/0172
- European Assessment acc. to EAD 330087-00-0601 (rebar): ETA-21/0171
- US-approval listing acc. to AC 308 in concrete (ICC-ES): ESR-4832, ASTM C881
- Certificated for drinking water applications acc. to NSF Standard 61
- For heavy anchoring - anchoring and post-installed rebar connection
- Fire resistance Test Report 22124, tests performed acc. to DIN EN 1363-1:2012 and Technical Report 020
- Overhead application
- Suitable for attachment points with small edge- and axial distances due to an anchoring free of expansion forces
- High chemical resistance
- VOC Tests: acc. to Leed, French Décret n°2011-321;
- Less critical ingredients; future-proof for more strict REACH regulation

Free off	**Phenol (CAS#: 108-95-2)** **DETA / TETA (CAS#: 111-40-0)** **Benzyl alcohole (CAS#: 100-51-6)** **Bisphenol-A (CAS#: 80-05-7)**

- Low odour
- High bending and pressure strength
- Cartridge can be reused up to the end of the shelf life by replacing the static mixer or resealing cartridge with the sealing cap

Applications

Suitable for facades, roofs, wood construction, metal construction; metal profiles, column, beam, console, railing, sanitary devices, cable trays, piping, post-installed rebar connection (reconstruction or reinforcement), etc.

Handling and Storage

- **Storage:** store in a cold and dark place, storage temperature: from +5°C up to +35 °C
- **Shelf life:** 24 months for cartridges

Mortar Properties

Properties	Test Method	Results
Compressive strength	EN 196-1	122 N / mm^2
Flexural strength	EN 196-1	66,0 N / mm^2
Axial tensile strength	DIN EN ISO 527-2	44,2 N / mm^2
E modulus	DIN EN ISO 527-2	6.300 N / mm^2
Elongation at fracture	DIN EN ISO 527-2	1%
Degree of shrinkage	DIN 52450	≤ 1,4%
Hardness Shore A	DIN EN ISO 868	99,4
Hardness Shore D	DIN EN ISO 868	86,1
Density		≤ 1,50 kg / dm^3
Thermal conductivity	DIN EN 993-15	0,50 W/mK
Heat capacity	DIN EN 993-15	1.350 J / kg K
Electrical resistance	DIN IEC 93	8,0 10^{12} Ω

Reactivity

Concrete temperature	Gelling working time	Minimum curing time in dry concrete	Minimum curing time in wet concrete
0 °C* to +4 °C*	80 min.	122 h	244 h
+5 °C to +9 °C	80 min.	48 h	96 h
+10 °C to +14 °C	60 min.	28 h	56 h
+15 °C to +19 °C	40 min.	18 h	36 h
+20 °C to +24 °C	30 min.	12 h	24 h
+25 °C to +34 °C	12 min.	9 h	18h
+35 °C to +39 °C	8 min.	6 h	12 h
+40 °C	8 min.	4 h	8 h
Cartridge temperature	+5 °C to +40 °C		

*outside scope of ETA

Applications and Intended use

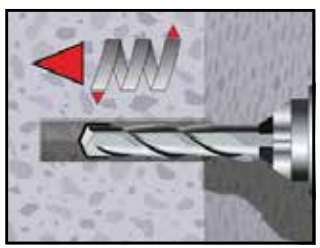
- **Base material:**
  cracked and non-cracked concrete, light-concrete, porous-concrete, natural stone (Attention!
  natural stone can discolour; shall be checked in advance)

- **Anchor elements:**
  Threaded rods (zinc plated or hot dip, stainless steel and high corrosion resistance steel),
  reinforcing bars, internal threaded rods, profiled rod, steel section with undercuts (e.g. perforated section)

- **Temperature range:**
  +5°C up to +40°C installation temperature
  cartridge temperature min. +5°C; optimal +40°C
  -40°C to +72°C base material temperature after full curing

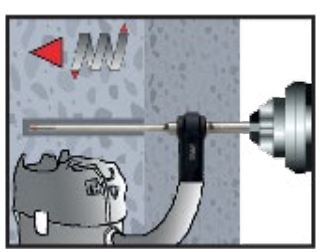
Usage Instructions - Concrete (for Threaded Rod and Rebar)

Drilling of the bore hole (HD, HDB, CD)



1a. Hammer (HD) or compressed air drilling (CD) Drill a hole into the base material to the size and embedment depth required by the selected anchor. Proceed with Step 2.

In case of aborted drill hole, the drill hole shall be filled with mortar.

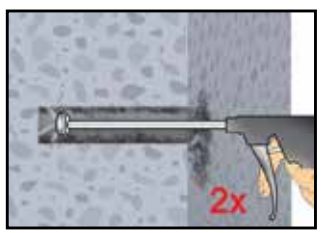


1b. Hollow drill bit system (HDB) Drill a hole into the base material to the size and embedment depth required by the selected anchor.
This drilling system removes the dust and cleans the bore hole during drilling. Proceed with Step 3.

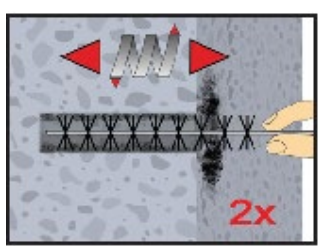
In case of aborted drill hole, the drill hole shall be filled with mortar.

Attention! Standing water in the bore hole must be removed before cleaning

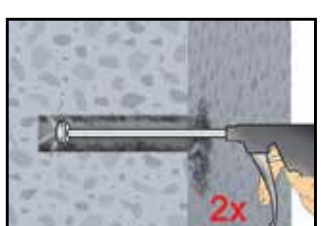
CAC: Cleaning for dry, wet and water filled bore holes with all diameter in uncracked and cracked concrete



2a. Starting from the bottom or back of the bore hole, blow the hole clean with compressed air (min. 6 bar) a minimum of two times until return air stream is free of noticable dust. If the bore hole ground is not reached, an extension must be used.



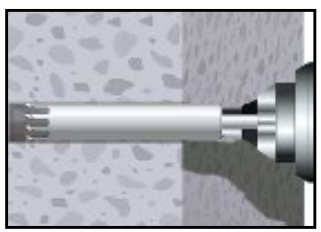
2b. Check brush diameter. Brush the hole with an appropriate sized wire brush > db,min a minimum of two times in a twisting motion. If the bore hole ground is not reached with the brush, a brush extension must be used.



2c. Finally blow the hole clean again with compressed air (min. 6 bar) a minimum of two times until return air stream is free of noticable dust. If the bore hole ground is not reached, an extension must be used.

After cleaning, the bore hole has to be protected against re-contamination in an appropriate way, until dispending the mortar in the bore hole. If necessary, the cleaning has to be repeated directly before dispensing the mortar. In-flowing water must not contaminate the bore hole again.

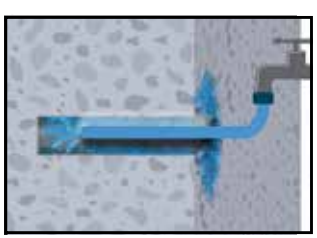
Drilling of the bore hole (DD)



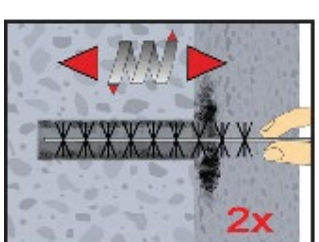
1a. Diamond drilling (DD)
Drill with diamond drill a hole into the base material to the size and embedment depth required by the selected anchor. Proceed with Step 2.

In case of aborted drill hole, the drill hole shall be filled with mortar.

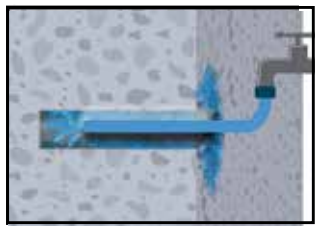
SPCAC; Cleaning for dry, wet and water-filled bore holes with all diameter in uncracked concrete



2a. Attention! Standing water in the bore hole must be removed before cleaning. Rinsing with water until clear water comes out.

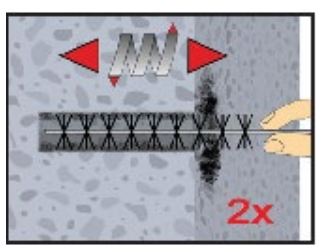


2b. Check brush diameter. Brush the hole with an appropriate sized wire brush > $d_{b,min}$ a minimum of two times in a twisting motion. If the bore hole ground is not reached with the brush, a brush extension must be used.

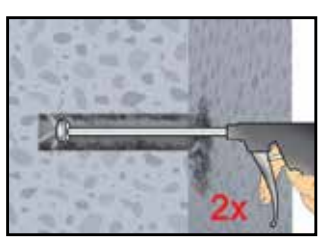


2c. Rinsing again with water until clear water comes out.

2d. Starting from the bottom or back of the bore hole, blow the hole clean with compressed air (min. 6 bar) a minimum of two times until return air stream is free of noticeable dust. If the bore hole ground is not reached, an extension must be used.

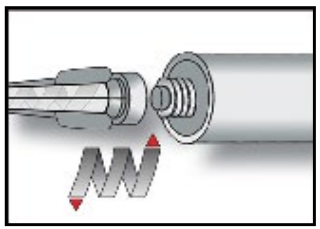


2e. Check brush diameter. Brush the hole with an appropriate sized wire brush > $d_{b,min}$ a minimum of two times in a twisting motion. If the bore hole ground is not reached with the brush, a brush extension must be used.

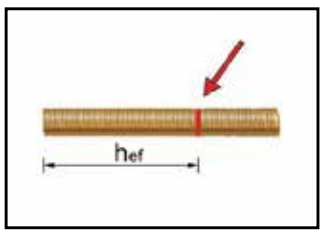


2f. Finally blow the hole clean again with compressed air (min. 6 bar) a minimum of two times until return air stream is free of noticeable dust. If the bore hole ground is not reached, an extension must be used.

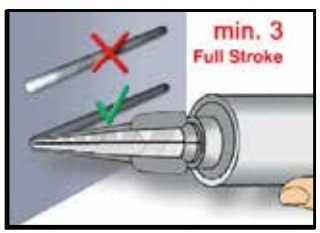
After cleaning, the bore hole has to be protected agains re-contamination in an appropriate way, until dispensing the mortar in the bore hole. If necessary, the cleaning has to be repeated directly before dispensing the mortar. In-flowing water must not contaminate the bore hole again.



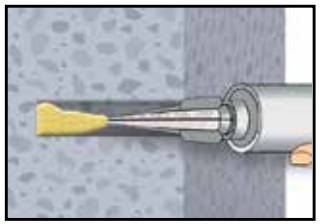
3. Attach the supplied static-mixing nozzle to the cartridge and load the cartridge into the correct dispensing tool. For every working interruption longer than the recommended working time as well as for new cartridges, a new static-mixer shall be used.



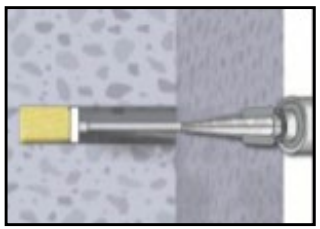
4. Prior to inserting the anchor rod into the filled bore hole, the position of the embedment depth shall be marked on the anchor rods.



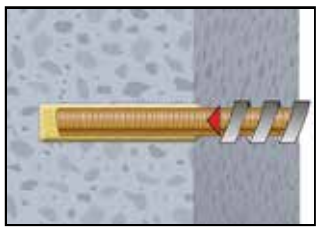
5. Prior to dispensing into the anchor hole, squeeze out separately a minimum of three full strokes and discard non-uniformly mixed adhesive components until the mortar shows a consistent grey or red colour.



6. Starting from the bottom or back of the cleaned anchor hole, fill the hole up to approximately two-thirds with adhesive. Slowly withdraw the static mixing nozzle as the hole fills to avoid creating air pockets. If the bottom or back of the anchor hole is not reached, an appropriate extension nozzle must be used. Observe the gel-/ working times given.

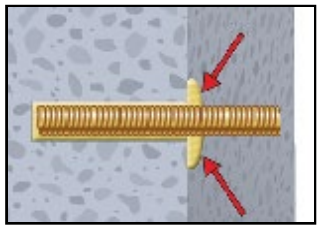


7. Piston plugs and mixer nozzle extensions shall be used for the following applications:
Horizontal assembly (horizontal direction) and ground erection (vertical downwards direction) Drill bit-Ø $d_0 \geq 18$ mm and embedment depth $h_{ef} > 250$mm
Overhead assembly (vertical upwards direction): Drill bit-Ø $d_0 \geq 18$ mm

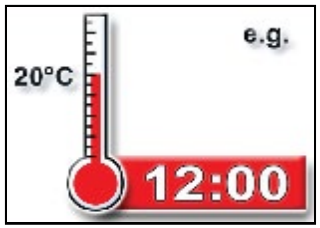


8. Push the threaded rod or reinforcing bar into the anchor hole while turning slightly to ensure positive distribution of the adhesive until the embedment depth is reached.

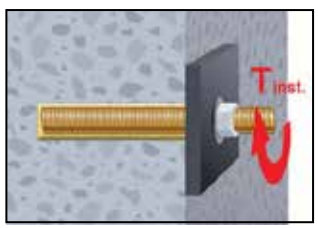
The anchor shall be free of dirt, grease, oil or other foreign material.



9. After inserting the anchor, the annular gab between anchor rod and concrete, in case of a push through installation additionally also the fixture, must be completely filled with mortar. If excess mortar is not visible at the top of the hole, the requirement is not fulfilled and the application has to be renewed. For overhead application the anchor rod shall be fixed (e.g. wedges).



10. Allow the adhesive to cure to the specified time prior to applying any load or torque. Do not move or load the anchor until it is fully cured.



11. After full curing, the add-on part can be installed with up to the maximum torque by using a calibrated torque wrench. In case of prepositioned installation, the annular gab between anchor and fixture can be optional filled with mortar.

Therefore substitute the washer by the filling washer and connect the mixer reduction nozzle to the tip of the mixer. The annular gap is filled with mortar, when mortar oozes out of the washer.

Setting parameter - concrete

Anchor size (threaded rod)			M8	M10	M12	M16	M20	M24	M27	M30
Diameter of element	$d=d_{nom}$	[mm]	8	10	12	16	20	24	27	30
Nominal drill hole diameter	d_0	[mm]	10	12	14	18	22	28	30	35
Effective embedment depth	$h_{ef,min}$	[mm]	60	60	70	80	90	96	108	120
	$h_{ef,max}$	[mm]	160	200	240	320	400	480	540	600
Diameter of clearence hole in the fixture [1]	Prepositioned instalation d_f	[mm]	9	12	14	18	22	26	30	33
	Push through instalation d_f	[mm]	12	14	16	20	24	30	33	40
Maximum torque moment	$T_{inst} \leq$	[Nm]	10	20	40 [2]	60	100	170	250	300
Minimum thickness of member	h_{min}	[mm]	h_{ef} + 30 mm $\geq$ 100 mm			$h_{ef} + 2d_0$				
Minimum spacing	S_{min}	[mm]	40	50	60	75	95	115	125	140
Minimum edge distance	C_{min}	[mm]	35	40	45	50	60	65	75	80

1) For application under seismic loading the diameter of clearance hole in the fixture shall be at maximum d1 + 1 mm or alternatively the annular gap between fixture and anchor rod shall be filled force-fit with mortar.

2) Maximum Torque moment for M12 with steel Grade 4.6 is 35 Nm

Anchor size (Rebar)			**ø 8**[1]	**ø 10**[1]	**ø 12**[1]	**ø14**	**ø16**	**ø20**	**ø 24**[1]	**ø 25**[1]	**ø28**	**ø32**
Diameter of element	$d=d_{nom}$	[mm]	8	10	12	14	16	20	24	25	28	32
Nominal drill hole diameter	d_0	[mm]	10 | 12	12 | 14	14 | 16	18	20	25	30 | 32	30 | 32	35	40
Effective embedment depth	$h_{ef,min}$	[mm]	60	60	70	75	80	90	96	100	112	128
	$h_{ef,max}$	[mm]	160	200	240	280	320	400	480	500	560	640
Minimum thickness of member	h_{min}	[mm]	h_{ef} + 30 mm ≥ 100 mm		$h_{ef} + 2d_0$							
Minimum spacing	S_{min}	[mm]	40	50	60	70	75	95	120	120	130	150
Minimum edge distance	C_{min}	[mm]	35	40	45	50	50	60	70	70	75	85

1) both nominal drill hole diameter d_0 can be used

Recommended loads - concrete

Threaded rods

The recommended loads are only valid for single anchors for a roughly design, if the following conditions are valid:

- $c \geq 1{,}5 \times h_{ef}$ $s \geq 3{,}0 \times h_{ef}$ $h \geq 2 \times h_{ef}$
- $\Psi_{sus} = 1{,}0$; percentage of permanent action load / total acting load $\leq \Psi_{sus}^{0}$ see table below
- Cleaning: Compressed Air Cleaning - CAC
- The recommended loads have been calculated using the partial safety factors for resistances stated in ETA(s) and with a partial safety factor for actions of $\gamma_f = 1.4$.
  The partial safety factor for seismic action is $\gamma_f = 1{,}0$.

If the conditions are not fulfilled, the loads must be calculated acc. to EN 1992-4.
For further details observe ETA-21/0172.

Recomended loads for a service life of 50 years - Steel quality 8,8 - Concrete - C20/25 - **Hammer (HD) and compressed air drilled (CD)** - Dry, wet concrete						M8	M10	M12	M16	M20	M24	M27	M30
Combined pull-out and concrete failure	40˚C/24˚C 1)	Ψ_{sus}^0 = 0.80	uncracked	$N_{Rec,stat}$	[kN]	13,8	20,0	27,0	32,7	51,9	71,3	92,6	103,9
			cracked	$N_{Rec,stat}$	[kN]	6,7	9,4	16,8	22,9	36,3	49,9	64,8	72,7
				$N_{Rec,eq,c1}$	[kN]	6,7	9,4	16,8	22,9	36,3	49,9	64,8	72,7
				$N_{Rec,eq,c2}$	[kN]	NPA	NPA	16,0	20,1	35,6	49,9	NPA	NPA
	72˚C/50˚C 1)	Ψ_{sus}^0 = 0.68	uncracked	$N_{Rec,stat}$	[kN]	13,8	20,0	27,0	32,7	51,9	71,3	92,6	103,9
			cracked	$N_{Rec,stat}$	[kN]	5,7	8,1	13,8	20,9	35,6	49,9	64,8	72,7
				$N_{Rec,eq,c1}$	[kN]	5,7	8,1	13,8	20,9	35,6	49,9	64,8	72,7
				$N_{Rec,eq,c2}$	[kN]	NPA	NPA	13,8	17,2	30,6	46,4	NPA	NPA
Shear load without lever arm 2)3)			uncracked	$V_{Rec,stat}$	[kN]	8,6	13,1	18,6	23,4	38,4	54,1	71,4	81,3
			cracked	$V_{Rec,stat}$	[kN]	7,7	9,5	13,2	16,6	27,2	38,3	50,6	57,6
				$V_{Rec,eq,c1}$	[kN]	7,7	9,5	13,2	16,6	27,2	38,3	50,6	57,6
				$V_{Rec,eq,c2}$	[kN]	NPA	NPA	13,2	16,6	27,2	38,3	NPA	n. a
Embedment depth				h_{ef}	[mm]	80	90	110	125	170	210	250	270
Edge distance				c ≥	[mm]	120	135	165	188	255	315	375	405
Axial distance				s ≥	[mm]	240	270	330	375	510	630	750	810

1) Short term temperature/ Long term temperature.

2) Shear loads are valid for the specified temperature ranges.

3) Gap between anchor rod and clearance hole of fixture must be filled with mortar; if not a_{gap} must be considered, see ETA-21/0172.

$N_{Rec,stat}$, $V_{Rec,stat}$ = Recommended load under static and quasi-static action

$N_{Rec,eq}$, $V_{Rec,eq}$ = Recommended load under seismic action

NPA = No performance assessed

Recommended loads - concrete

Rebar

The recommended loads are only valid for single anchors for a roughly design, if the following conditions are valid:

- $c \geq 1{,}5 \times h_{ef}$ $s \geq 3{,}0 \times h_{ef}$ $h \geq 2 \times h_{ef}$
- $\Psi_{sus} = 1{,}0$; percentage of permanent action load / total acting load $\leq \Psi_{sus}^{0}$ see table below
- Cleaning: Compressed Air Cleaning - CAC
- The recommended loads have been calculated using the partial safety factors for resistances stated in ETA(s) and with a partial safety factor for actions of $\gamma_f = 1.4$.
  The partial safety factor for seismic action is $\gamma_f = 1{,}0$.

If the conditions are not fulfilled, the loads must be calculated acc. to EN 1992-4.
For further details observe ETA-21/0172.

Recomended loads for a service life of 50 years - BSt 500 - Concrete - C20/25 - **Hammer (HD) & compressed air drilled (CD)** - Dry, wet concrete						ø8	ø10	ø12	ø14	ø16	ø20	ø24	ø25	ø28	ø32
Combined pull-out and concrete failure	40˚C/24˚C 1)	Ψ^0_{sus} = 0,80	uncracked	$N_{Rec,stat}$	[kN]	14,3	20,0	27,0	28,9	32,7	51,9	68,8	71,3	92,6	103,9
			cracked	$N_{Rec,stat}$	[kN]	6,7	9,4	16,8	20,2	22,9	36,3	48,1	49,9	64,8	72,7
				$N_{Rec,eq,c1}$	[kN]	6,7	9,4	16,8	20,2	22,9	36,3	48,1	49,9	64,8	NPA
				$N_{Rec,eq,c2}$	[kN]	NPA									
	72˚C/50˚C 1)	Ψ^0_{sus} = 0,68	uncracked	$N_{Rec,stat}$	[kN]	11,5	16,2	23,7	28,9	32,7	51,9	68,8	71,3	92,6	103,9
			cracked	$N_{Rec,stat}$	[kN]	5,7	8,1	13,8	16,9	20,9	35,6	48,1	49,9	64,8	72,7
				$N_{Rec,eq,c1}$	[kN]	5,7	8,1	13,8	16,9	20,9	35,6	48,1	49,9	64,8	NPA
				$N_{Rec,eq,c2}$	[kN]	NPA									
Shear load without lever arm 2)3)			uncracked	$V_{Rec,stat}$	[kN]	6,7	10,5	14,8	20,3	23,4	38,4	52,2	54,4	71,8	82,1
			cracked	$V_{Rec,stat}$	[kN]	6,7	9,5	13,2	14,4	16,6	27,2	36,9	38,5	50,8	58,2
				$V_{Rec,eq,c1}$	[kN]	6,5	9,5	13,2	14,4	16,6	27,2	36,9	38,5	50,8	58,2
				$V_{Rec,eq,c2}$	[kN]	NPA									
Embedment				h_{ef}	[mm]	80	90	110	115	125	170	205	210	250	270
Edge distance				c ≥	[mm]	120	135	165	173	188	255	308	315	375	405
Axial distance				s ≥	[mm]	240	270	330	345	375	510	615	630	750	810

1) Short term temperature/ Long term temperature.

3) Shear loads are valid for the specified temperature ranges.

4) Gap between anchor rod and clearance hole of fixture must be filled with mortar; if not a_{gap} must be considered, see ETA-21/0172.

$N_{Rec,stat}$, $V_{Rec,stat}$ = Recommended load under static and quasi-static action

$N_{Rec,eq}$, $V_{Rec,eq}$ = Recommended load under seismic action

NPA = No performance assessed

TP VSF

Reaction Resin Mortar Based on Vinylester Styrene-Free Resin

Product Description

TP VSF mortar is a 2-component reaction resin mortar based on a vinylester resin styrene-free and will be delivered in a 2-c cartridge (ST - Standard cartridge; PM - Pre-Mix cartridge; SF - Foil Tube cartridge) system. This high performance product may be used in combination with a hand-, battery- or pneumatic tool and a static mixer. It was designed especially for the anchoring of threaded rods, reinforcing bars or internal threaded rod sleeves into concrete (also porous and light) as well as masonry. Based on the excellent standing behavior, the usability in combination with a special plastic sleeve in hollow material is given. TP VSF mortar product is characterized by a huge range of applications with an installation temperature from -10°C and an application temperature up to 80°C, as well as by high chemical resistance for applications in extreme ambiences, e.g. in swimming pools (chlorine) or in closeness to the sea (salt). The wide range of certificates, as well as national and international approvals, allows nearly every application.

Item Number	Description	Size
TP 1124-2	TP VSF Vinylester styrene free with two Ring Mixer	420ml

Approvals / Certificates

F120
Fire resistance report

NSF
Certified to NSF/ANSI/CAN 61

ÉMISSIONS DANS L'AIR INTÉRIEUR
A+
A+ A B C

LEED tested

ETA
CE 2873
Team Pro
Plant 1 Germany
10
2873-CPR-M 533-4
ETA-10/0354
EAD 330499-00-0601- Option1
M8-M30/Ø8-Ø32/IG M6-IG M20
For use in cracked and non-cracked concrete

ETA
CE 2873
Team Pro
Plant 1 Germany
10
2873-CPR-M 533-5
ETA-10/0355
EAD 330087-00-0601
Ø8-Ø32/ZA M12-ZA M24
Post-installed rebar

Properties and Benefits

- European Technical Assessment for use in concrete: ETA-10/0354
- European Technical Assessment for post installated rebar: ETA-10/0355
- Certificated for drinking water applications acc. to NSF Standard 61
- For heavy anchoring - doweling and post-installed rebar connection
- Fire resistance test report: EBB 170019_15en
- National approval in masonry
- Overhead application; water-filled bore holes
- Suitable for attachment points with small-edge and axial distances due to an anchoring free of expansion forces
- High chemical resistance
- Low odour
- High bending and pressure strength
- Cartridge can be reused up to the end of the shelf life by replacing the static mixer or resealing cartridge with the sealing cap

Applications

Suitable for the fixation of facades, roofs, wood constructions, metal constructions; metal profiles, columns, beams, consoles, railings, sanitary devices, cable trays, piping, post-installed rebar connection (reconstruction or reinforcement), etc.

Handling and Storage

- Storage: Store in a cold and dark place - storage temperature: from +5°C up to +25 °C
- Shelf Life: 18 months for cartridges (ST), 12 months for foil tubes (SF)

Applications and Intended Use

- Underground:
  Cracked and non-cracked concrete, light concrete, porous concrete, solid masonry, hollow brick, natural stone (Attention: natural stone, can discolour; shall be checked in advance); hammer-drilled holes (hollow material shall be drilled without hammer-drilled mode)
- Anchor Elements:
  Threaded rods (zinc plated or hot dip, stainless steel and high corrosion resistance steel), reinforcing bars, internal threaded rods, profiled rod, steel section with undercuts (e.g. perforated section)
- Temperature Range:
  Installation temperature: -10°C up to +40°C
  Cartridge temperature: min. +5°C; optimal +20°C
  Base material temperature after full curing: -40°C to +120°C

Reactivity

Temperature of base material	Gelling and working time	Full curing time in dry base material	Full curing time in wet base material
-10 ° C to -6° C1)	90 min.	24 h	48 h
-5 ° C to -1° C	90 min.	14 h	28 h
0 ° C to +4° C	45 min.	7 h	14 h
+5 ° C to +9° C	25 min.	2 h	4 h
+10 ° C to +19° C	15 min.	80 min.	160 min.
+20 ° C to 29° C	6 min.	45 min.	90 min.
+30 ° C to 34° C	4 min.	25 min.	50 min.
+35 ° C to 39° C	2 min.	20 min.	40 min.
+40° C	1,5 min.	15 min.	30 min.

1) For installations in base material temperature between -10°C and -6°C, the cartridge temperature must be conditioned between +15°C and +25°C.

Mortar Properties

Properties	Test Method	Result
UV resistance	-	Pass
Watertightness	DIN EN 12390-8	0 mm
Temperature stability	-	120 °C
pH-value	-	> 12
Density	-	1,77 kg / dm^3
Compressive strength	EN 196 Teil 1	100 N / mm^2
Flexural strength	EN 196 Teil 1	15 N / mm^2
E modulus	EN 196 Teil 1	14000 N / mm^2
Shrinkage	-	< 0,3%
Hardness Shore D	-	90
Electrical resistance	IEC 93	3,6 x 10^9 Ω m
Thermal conductivity	IEC 60093	0,65 W/m.K

Setting Parameter - Concrete

Anchor size (Threaded rod)				M8	M10	M12	M16	M20	M24	M27	M30
Edge distance		$C_{cr,N}$	[mm]	92	126	152	188	253	291	312	329
Min. edge distance	5,0 x d	C_{min}	[mm]	40	50	60	80	100	120	135	150
Axial distance		$S_{cr,N}$	[mm]	184	252	304	376	506	582	624	658
Min. axial distance	5,0 x d	S_{min}	[mm]	40	50	60	80	100	120	135	150
Embedment depth		h_{ef}	[mm]	80	90	110	125	170	210	250	270
Min. part thickness		h_{min}	[mm]	h_{ef} + 30 mm			h_{ef} + 2 d_o				
Anchor diameter		d	[mm]	8	10	12	16	20	24	27	30
Drill diameter		d_o	[mm]	10	12	14	18	24	28	32	35
Max. installation torque		$T_{inst.}$	[Nm]	10	20	40	60	120	150	200	250

Anchor size (Rebar)				ø8	ø10	ø12	ø14	ø16	ø20	ø25	ø28	ø32
Edge distance		$C_{cr,N}$	[mm]	92	126	152	173	188	253	303	323	341
Min. edge distance	5,0 x d	C_{min}	[mm]	40	50	60	70	80	100	125	140	160
Axial distance		$S_{cr,N}$	[mm]	184	252	304	346	376	506	606	646	682
Min. axial distance	5,0 x d	S_{min}	[mm]	40	50	60	70	80	100	125	140	160
Embedment depth		h_{ef}	[mm]	80	90	110	115	125	170	210	250	270
Min. part thickness		h_{min}	[mm]	h_{ef} + 30 mm		h_{ef} + 2 d_o						
Anchor diameter		d	[mm]	8	10	12	14	16	20	25	28	32
Drill diameter		d_o	[mm]	12	14	16	18	20	24	32	35	40
Max. installation torque		$T_{inst.}$	[Nm]	10	20	40	50	60	120	150	200	250

Recommended Loads - Concrete

The recommended loads are only valid for single anchor for a roughly design, if the following conditions are valid:

$c \geq 1{,}5 \times h_{ef}$ $s \geq 3 \times h_{ef}$ $h \geq 2 \times h_{ef}$

If the conditions are not fulfilled, the loads must be calculated acc. to EOTA Technical Report TR 029.
The safety factors are already included in the recommended loads.

Anchor size (steel quality 5.8)[1]					M8	M10	M12	M16	M20	M24	M27	M30
Recommended tension load	40˚C/24˚C[2]	uncracked concrete	$N_{Rec,stat}$[3]	[kN]	8,6	12,8	19,7	28,0	44,4	61,0	79,2	93,9
		cracked concrete	$N_{Rec,stat}$		3,4	5,3	9,1	13,7	23,3	34,6	54,7	66,9
			$N_{Rec,seis}$[3]		2,2	3,3	6,2	9,3	15,9	23,8	37,7	47,1
	80˚C/50˚C[2]	uncracked concrete	$N_{Rec,stat}$	[kN]	6,5	9,6	14,8	22,4	38,1	53,4	63,1	68,1
		cracked concrete	$N_{Rec,stat}$		2,2	3,7	6,6	10,0	17,0	25,1	37,9	47,1
			$N_{Rec,seis}$		1,4	2,3	4,5	6,8	11,5	17,3	26,1	32,5
	120˚C/72˚C[2]	uncracked concrete	$N_{Rec,stat}$	[kN]	4,7	6,9	10,7	16,2	27,6	40,8	46,3	52,4
		cracked concrete	$N_{Rec,stat}$		1,7	2,7	4,9	7,5	12,7	18,8	29,5	36,7
			$N_{Rec,seis}$		1,1	1,7	3,4	5,1	8,6	13,0	20,3	25,1
Recommended shear load without lever arm[1]		uncracked concrete	$V_{Rec,stat}$[3]	[kN]	5,1	8,6	12,0	22,9	35,4	50,9	65,7	80,6
		cracked concrete	$V_{Rec,stat}$		5,1	8,6	12,0	18,6	30,4	42,8	56,5	68,0
			$V_{Rec,seis}$[3]		3,6	6,0	8,4	16,0	24,8	35,6	46,0	56,4
Embedment depth			h_{ef}	[mm]	80	90	110	125	170	210	250	270
Edge distance			$C_{cr,N}$	[mm]	92	126	152	188	253	291	312	329
Axial distance			$S_{cr,N}$	[mm]	$2 \times C_{cr,N}$							

1) Shear load with leaver arm acc. TR 029, for seismic load acc. to TR 045

2) Short term temperature/ Long term temperature

3) Gap between anchor rod and clearance hole must be filled with mortar; if not α_{gap} must be considered, see ETA

$N_{Rec,stat}$, $V_{Rec,stat}$ = Recommended Load under static and quasi-static action

$N_{Rec,seis}$, $V_{Rec,seis}$ = Recommended Load under seismic action

Recommended Loads - Concrete

The recommended loads are only valid for single anchor for a roughly design, if the following conditions are valid:

$c \geq 1{,}5 \times h_{ef}$ $s \geq 3 \times h_{ef}$ $h \geq 2 \times h_{ef}$

If the conditions are not fulfilled, the loads must be calculated acc. to EOTA Technical Report TR 029.
The safety factors are already included in the recommended loads.

Anchor size (BSt 500)[1]					ø8	ø10	ø12	ø14	ø16	ø20	ø25	ø28	ø32
Recommended tension load	40°C/24°C[2]	uncracked concrete	$N_{Rec,stat}$[3]	[kN]	8,6	12,8	19,7	24,1	28,0	44,4	61,0	79,2	88,9
		cracked concrete	$N_{Rec,stat}$		3,4	5,3	9,1	11,0	13,7	23,3	36,0	56,5	63,4
			$N_{Rec,seis}$[3]		2,2	3,3	6,2	7,5	9,3	16,1	24,8	39,1	48,3
	80°C/50°C[2]	uncracked concrete	$N_{Rec,stat}$	[kN]	6,5	9,6	14,8	18,1	22,4	38,1	52,4	61,1	64,6
		cracked concrete	$N_{Rec,stat}$		2,2	3,7	6,6	8,0	10,0	17,0	26,2	39,3	48,5
			$N_{Rec,seis}$		1,4	2,3	4,5	5,5	6,8	11,7	18,1	27,1	33,4
	120°C/72°C[2]	uncracked concrete	$N_{Rec,stat}$	[kN]	4,7	6,9	10,7	13,0	16,2	27,6	39,3	43,6	48,5
		cracked concrete	$N_{Rec,stat}$		1,7	2,7	4,9	6,0	7,5	12,7	19,6	30,5	37,7
			$N_{Rec,seis}$		1,1	1,7	3,3	4,1	5,1	8,5	13,7	20,9	26,0
Recommended shear load without lever arm[1]		uncracked concrete	$V_{Rec,stat}$[3]	[kN]	8,0	12,6	17,7	22,7	26,2	42,9	60,8	80,3	91,8
		cracked concrete	$V_{Rec,stat}$		6,9	10,6	14,7	16,1	18,6	30,4	43,1	56,8	65,0
			$V_{Rec,seis}$[3]		3,7	6,7	12,4	15,1	18,6	30,4	43,1	56,8	65,0
Embedment depth			h_{ef}	[mm]	80	90	110	115	125	170	210	250	270
Edge distance			$c_{cr,N}$	[mm]	92	126	152	173	188	253	303	323	341
Axial distance			$s_{cr,N}$	[mm]	$2 \times c_{cr,N}$								

1) Shear load with leaver arm acc. TR 029, for seismic load acc. to TR 045

2) Short term temperature/ Long term temperature

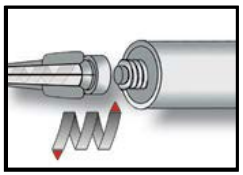
3) Gap between anchor rod and clearance hole must be filled with mortar; if not α_{gap} must be considered, see ETA

$N_{Rec,stat}$, $V_{Rec,stat}$ = Recommended Load under static and quasi-static action

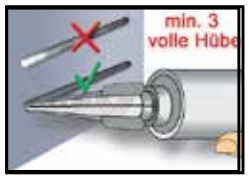
$N_{Rec,seis}$, $V_{Rec,seis}$ = Recommended Load under seismic action

Installation instructions in Masonry blocks

Preparation of cartridge

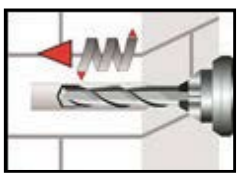


1. Remove the cap and attach the supplied static-mixing nozzle to the cartridge and load the cartridge into the correct dispensing tool. In case of a foil tube cartridge, cut off the clip before use. For every working interruption longer than the recommended working time as well as for new cartridges, a new static-mixer shall be used.

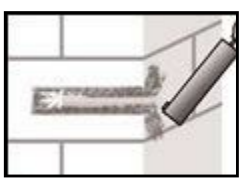


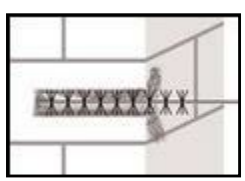
2. Initial adhesive is not suitable for fixing the anchor. Prior to dispensing into the anchor hole, squeeze out separately a minimum of three full strokes, for foil tube cartridges six full strokes and discard non-uniformly mixed adhesive components until the mortar shows a consistent grey colour.

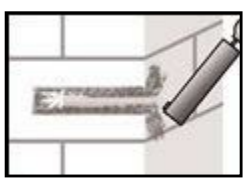
Installation in solid masonry (without sleeve)



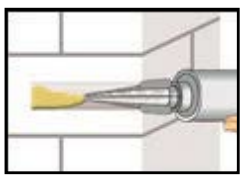
3. Holes to be drilled perpendicular to the surface of the base material by using a hard-metal tipped hammer drill bit. Drill a hole into the base material, with nominal drill hole diameter and bore hole depth according to the size and embedment depth required by the selected anchor. In case of aborted drill hole the drill hole shall be filled with mortar.



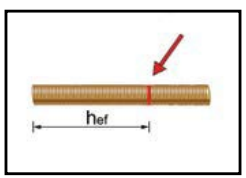




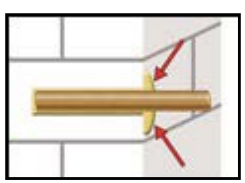
4. Blow out from the bottom of the bore hole two times. Attach the brush to a drilling machine or a battery screwdriver, brush the hole clean two times, and finally blow out the hole again two times.



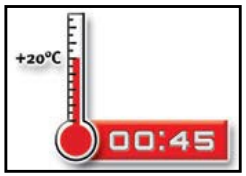
5. Starting from the bottom or the back of the cleaned anchor hole, fill the hole up to min two-thirds with adhesive. Slowly withdraw the static minxing nozzle will avoid creating air pockets. Observe the gel-/ working times.



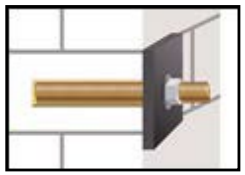
6. The position of the embedment depth shall be marked on the threaded rod. Push the threaded rod into the anchor hole while turning slightly to ensure positive distrubation of the adhesive until the embedment depth is reached. The anchor shall be free of dirt, grease, oil or other foreign material.



7. Be sure that the anular gap is fully filled with mortar. if no excess mortar is visible at the top of the hole, the application has to be renewed.

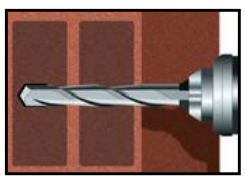


8. Allow the adhesive to cure to the specified curing time prior to applying any load or torque. Do not move or load the anchor until it is fully cured.

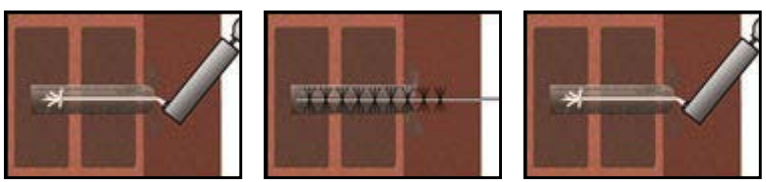


9. After full curing, the fixture can be installed with up to the max. installation torque (see parameters of brick) by using a calibrated torque wrench.

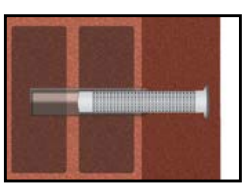
■ Installation in solid and hollow masonry (with sleeve)



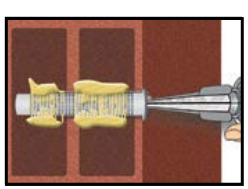
3. Holes to be drilled perpendicular to the surface of the base material by using a hard-metal tipped hammer drill bit. Drill a hole, into the base material, with nominal drill hole diameter and bore hole depth according to the size and embedment depth required by the selected anchor.



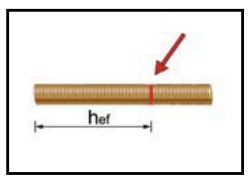
4. Blow out from the bottom of the bore hole two times. Attach the brush to a drilling machine or a battery screwdriver, brush the hole clean two times, and finally blow out the hole again two times.

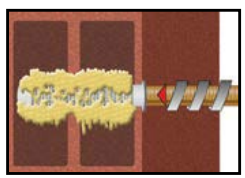


5. Insert the perforated sleeve flush with the surface of the masonry or plaster. Only use sleeves that have the right length. Never cut the sleeve.

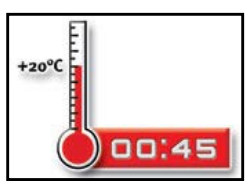


6. Starting from the bottom or back fill the sleeve with adhesive. For embedment depth equal to or larger than 130 mm an extension nozzle shall be used. For quantity of mortar attend cartridges label installation instructions.Observe the gel-/ working times.

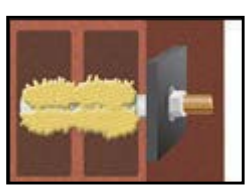




7. The position of the embedment depth shall be marked on the threaded rod. Push the threaded rod into the anchor hole while tuming slightly to ensure positive distribution of the adhesive until the embedment depth is reached. The anchor shall be free of dirt, grease, oil or other foreign material.



8. Allow the adhesive to cure to the specified curing time prior to applying any load or torque. Do not move or load the anchor until it is fully cured.



9. After full curing, the fixture can be installed with up to the max. installation torque (see parameters of brick) by using a calibrated torque wrench.

TP EA

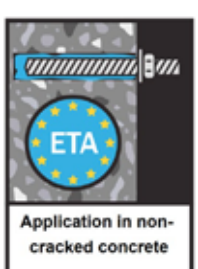
Reaction Resin Mortar Based on Epoxy Acrylate

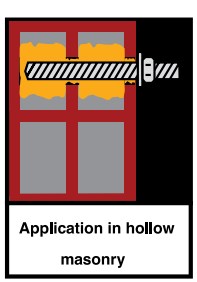
Product Description

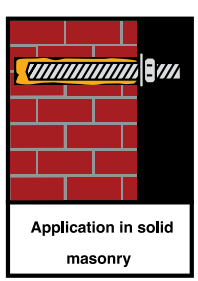
TP EA is a 2-component reaction resin mortar based on an epoxy acrylate. This product may be used in combination of a hand-, battery- or pneumatic tool and a static mixer. It was designed as a cost-effective alternative for the anchoring of threaded rods and internal threaded rod sleeves for approved applications. By using a screen sleeve, an easy and safe application in hollow bricks is guaranteed. TP EA product is characterized by good applications with an ambiance temperature up to 80°C.

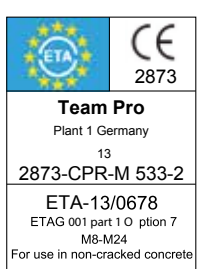
Item Number	Description	Size
TP 1115-2	TP EA Epoxy Acrylate with two Ring Mixer	300ml

Approvals / Certificates









Properties and Benefits

- European approval in concrete ETA 13/0678
- Application in uncracked concrete, solid brick, and hollow brick with commercial threaded rods
- Overhead application
- Suitable for attachment points close to the edge, since anchoring is free of expansion forces
- Reduced chemical resistance
- High bending- and pressure strength
- Cartridge can be reused up to the end of the shelf life by replacing the static mixer or resealing cartridge with the screw cap
- Mechanical properties acc. to EN 196 Part1
  - Density: 1,66 kg/dm^2
  - Compressive strength: 108 N/mm^2
  - Bending strength: 56 N/mm^2
  - Dynamic modulus of elasticity: 3300 N/mm^2

Applications

Suitable for the fixation of facades, roofs, wood constructions, metal constructions metal profiles, console, railing, sanitary devices, cable trays, piping, etc.

Handling and Storage

- Storage: Store in a cold and dark place, storage temperature: from +5°C up to +25 °C
- Shelf Life: 18 months for standard cartridge (ST); 9 months for foil tube cartridge (SF)

Applications and Intended Use

- Underground:
  Non-cracked concrete, light concrete, porous concrete, solid masonry, hollow brick, natural stone (Attention: natural stone, can discolour; shall be checked in advance); hammer-drilled holes
- Anchor Elements:
  Threaded rods (zinc plated or hot dip, stainless steel and high corrosion resistance steel), reinforcing bars, internal threaded rods, profiled rod, steel section with undercuts (e.g. perforated section)
- Temperature Range:
  Installation temperature: 5°C up to +35°C
  Cartridge temperature: min. +5°C; optimal +20°C
  Base material temperature after full curing: -40°C to +80°C

Setting Parameter - Concrete

Anchor size (Threaded rod)				M8	M10	M12	M16	M20	M24
Edge distance	1,0 x h_{ef}	$C_{cr,N}$	[mm]	80	90	110	125	170	210
Min. edge distance	5,0 x d	C_{min}	[mm]	40	50	60	80	100	120
Axial distance	2,0 x h_{ef}	$S_{cr,N}$	[mm]	160	180	220	250	340	420
Min. axial distance	5,0 x d	S_{min}	[mm]	40	50	60	80	100	120
Embedment depth		h_{ef}	[mm]	80	90	110	125	170	210
Min. part thickness		h_{min}	[mm]	h_{ef} + 30 mm			h_{ef} + 2 d_o		
Anchor diameter		d	[mm]	8	10	12	16	20	24
Drill diameter		d_o	[mm]	10	12	14	18	24	28
Installation torque		$T_{inst.}$	[Nm]	10	20	40	60	120	150

Reactivity

Temperature of base material	Gelling and working time	Full curing time in dry base material	Full curing time in wet base material
-5° C	90 min.	360 min.	720 min.
0° C	45 min.	180 min.	360 min.
+5° C	25 min.	120 min.	240 min.
+10° C	15 min.	80 min.	160 min.
+20° C	6 min.	45 min.	90 min.
+30° C	4 min.	25 min.	50 min.
+35° C	2 min.	20 min.	40 min.

Recommended Loads - Concrete

The recommended loads are only valid for single anchor for a roughly design, if the following conditions are valid:
Dry or wet bore hole, uncracked concrete C20/25, steel 5.8

- $C \geq C_{cr,N}$
- $S \geq S_{cr,N}$
- $h \geq 2 \times h_{ef}$

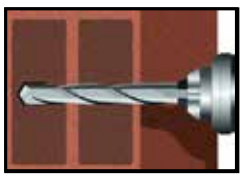
If the conditions are not fulfilled, the loads must be calculated acc. to ETAG 001 Annex C.
The safety factors are already included in the recommended loads.

Anchor size (Threaded rod)			M8	M10	M12	M16	M20	M24
Embedment depth	h_{ef}	[mm]	80	90	110	125	170	210
Edge distance	$C_{cr,N}$	[mm]	$1,5 \times h_{ef}$					
Axial distance	$S_{cr,N}$	[mm]	$3,0 \times h_{ef}$					
Recommended tension load 24° C/ 40° C[2)]	N_{Rec}	[kN]	8,6	12,1	16,8	21,2	33,9	50,3
Recommended tension load 50° C/ 80° C[2)]	N_{Rec}	[kN]	7,7	10,8	14,8	18,7	29,7	44,0
Recommended shear load without lever arm for steel property class 5.8[1)]	V_{Rec}	[kN]	5,1	8,6	12,0	22,9	35,4	50,9

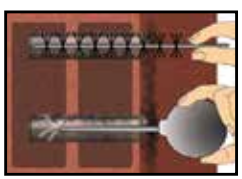
1) Shear load with lever arm acc. to Annex C of ETAG 001.

2) Short-term temperature / Long-term temperature. Long-term concrete temperatures are roughly constant over significant periods of time. Short-term elevated temperatures are those that occur over brief intervals, e.g. as a result of diurnal cycling.

Usage Instructions - Hollow Bricks

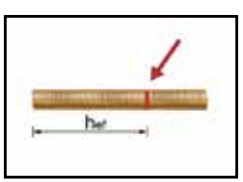


1. Drill without hammer drill mode a hole into the base material to the size and embedment depth required by the selected anchor.



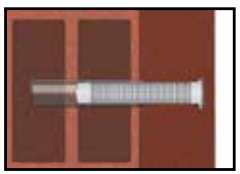
2. In case of a water-filled bore hole, the water has to be removed from the hole (e.g. by compressed air or vacuum cleaner). Starting from the bottom or back of the hole, blow the hole clean with a hand-pump a minimum of two times. Then, brush the hole with a nylon brush a minimum of two times. Finally, clean the hole again with a handpump a minimum of two times.

3.Attach a supplied static-mixing nozzle to the cartridge and load the cartridge into the correct dispensing tool. After every working interruption longer than the recommended working time, as well as for new cartridges, a new static-mixer shall be used.

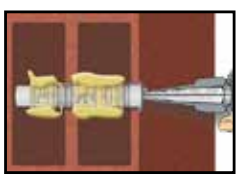


4. Prior to inserting the anchor rod into the filled bore hole, the position of the embedment depth shall be marked on the anchor rods.

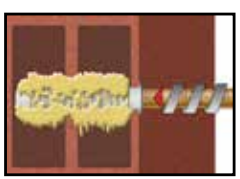
5. Prior to dispensing the mortar into the bore hole, squeeze out separately a minimum of three full strokes, and discard non-uniformly mixed adhesive components until the mortar shows a consistent grey colour.



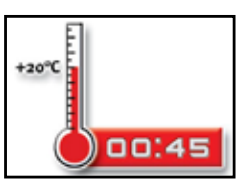
6. Insert the perforated sleeve into the bore hole. Make sure that the sleeve fits well into the hole.
Never cut the sleeve! Only use sleeves that have the right length.



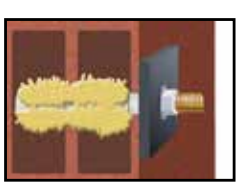
7. Starting from the back, fill the sleeve completely with adhesive. Observe the gel / working times.



8. Push the threaded rod or reinforcement bar into the sleeve while turning it slightly, to ensure a distribution of the adhesive until the back of the sleeve is reached.
The anchor should be free of dirt, grease, oil, or other foreign material.



9. Allow the adhesive to cure to the specified time prior to applying any load to torque.
Do not move or load the anchor until it is fully cured.



10. After full curing, the add-on part can be installed with the max. torque by using a calibrated torque wrench.

Load Table - Masonry

Stone	Strength class	Recommended loads		Standard sleeves				Wing sleeve	
				M6	M8	M10	M12	M8	M10
Hollow brick	Hlz 4	F_{rec}	[kN]	0,3	0,3	0,3	0,3	0,3	0,3
	Hlz 6			0,4	0,4	0,4	0,4	0,4	0,4
	Hlz 12			0,7	0,8	0,8	0,8	0,8	0,8
Sand-lime hollow brick	KSL 4	F_{rec}	[kN]	0,3	0,3	0,3	0,3	0,3	0,3
	KSL 6			0,4	0,4	0,4	0,4	0,4	0,4
	KSL 12			0,7	0,8	0,8	0,8	0,8	0,8
Sand-lime solid brick[1)]	KS 12	F_{rec}	[kN]	0,5	1,7	1,7	1,7	1,7	1,7
Solid brick[1)]	Mz 12	F_{rec}	[kN]	0,5	1,7	1,7	1,7	1,7	1,7
Light concrete hollow brick	Hbl 2	F_{rec}	[kN]	0,3	0,3	0,3	0,3	-	-
	Hbl 4			0,5	0,6	0,6	0,6	-	-
Concrete hollow brick	Hbn 4	F_{rec}	[kN]	0,5	0,6	0,6	0,6	-	-

Standard Plastic Sleeve

Load Table - Masonry

Installation parameters				Standard sleeves				Wing sleeve	
				M6	M8	M10	M12	M8	M10
Axial distance plug group		$S_{cr,N\ Group}$	[mm]	Hlz, KSL, Mz, KS = 100 Hbl, Hbn = 200				100	
Min. Axial distance plug group[2)]		$S_{min\ Group}$	[mm]	Hlz, KSL, Mz, KS = 50 Hbl, Hbn = 200				50	
Axial distance between single plugs		$S_{cr,N\ Single}$	[mm]	250				250	
Edge distance		$C_{cr,N}$	[mm]	250				200 (250)[3)]	
Min. Edge distance[4)]		C_{min}	[mm]	250				50 (60)[3)]	
Embedment depth of rod	with sleeve	h_{ef}	[mm]	50	85	85	85	80	90
	without sleeve	h_{ef}	[mm]	60	80	90	110	80	90
Drilling depth	with sleeve	h_o	[mm]	55	90	90	90	105	105
	without sleeve	h_o	[mm]	65	85	95	115	85	95
Minimum part thickness		h_{min}	[mm]	110			125	110	
Drill diameter		d_o	[mm]	11	16	16	16	14	16
Hole diameter in fixed element		d_f	[mm]	7	9	12	14	9	12
Installation torque		$T_{inst.}$	[Nm]	3	8	8	8	2	2

1) Anchoring in masonry of solid sand-lime bricks (KS) and masonry bricks (Mz) does not require perforated sleeve.

2) It is permissible to go below the axial spacing to the minimum value for anchor pairs and groups of four, if the permissible loads are reduced. The maximum loads must not be exceeded.

3) Value in brackets applies to solid bricks (Mz and KS).

4) Applies to masonry with top load or proof of tilt. Does not apply to shear loads directed towards a free edge.

ACCESSORIES FOR CHEMICAL ANCHORS

TP DISPENSERS

TP GUN 300

TP GUN 380-420

TP GUN 385-585

Item Number	Description	Cartridge Fitting
TP GUN 300	TP Gun for 300 ml - Steel Body and Mechanism	TP EA
TP GUN 380-420	TP Gun for 380 ml to 420 ml coaxial cartridge - Steel Body and Mechanism	TP VSF
TP GUN 385-585	TP Gun for side-by-side fits-all cartridge - Steel Body and Mechanism	TP E SD

Advantages

- Adjustment screw extends the working life of the tool infinitely as it allows resetting of the spring tension in the trigger action. Saves you time and money.
- High tensile grade coated steel used in the trigger mechanism to give you a lifelong finish and no breakages in this vulnerable area.
- High grade and high tensile steel used in the pistons. Will remain rigid, strong, and with a protective finish forever.

Stud bolt chemical anchor

TP SB / TP SB A2 / TP SB A4

TP SB - Stud Bolt Chemical Anchor (zinc)

Item Number	Description	Size*
TP 6285	TP Stud Bolt Chemical Anchor (Zinc)	M8 x 110 Ø 8
TP 6286	TP Stud Bolt Chemical Anchor (Zinc)	M10 x 130 Ø 10
TP 6287	TP Stud Bolt Chemical Anchor (Zinc)	M12 x 160 Ø 12
TP 6288	TP Stud Bolt Chemical Anchor (Zinc)	M16 x 190 Ø 16
TP 6289	TP Stud Bolt Chemical Anchor (Zinc)	M20 x 260 Ø 20
TP 6290	TP Stud Bolt Chemical Anchor (Zinc)	M24 x 300 Ø 24
TP 6291	TP Stud Bolt Chemical Anchor (Zinc)	M30 x 330 Ø 30

**(Diameter) x (Length) ø (Drill diameter) - mm*

TP SB A2 - Stud Bolt Chemical Anchor (Stainless Steel A2)

Item Number	Description	Size*
TP 6292	TP Stud Bolt Chemical Anchor (Stainless Steel A2)	M8 x 110 Ø 8
TP 6293	TP Stud Bolt Chemical Anchor (Stainless Steel A2)	M10 x 130 Ø 10
TP 6294	TP Stud Bolt Chemical Anchor (Stainless Steel A2)	M12 x 160 Ø 12
TP 6295	TP Stud Bolt Chemical Anchor (Stainless Steel A2)	M16 x 190 Ø 16
TP 6296	TP Stud Bolt Chemical Anchor (Stainless Steel A2)	M20 x 260 Ø 20
TP 6297	TP Stud Bolt Chemical Anchor (Stainless Steel A2)	M24 x 300 Ø 24
TP 6298	TP Stud Bolt Chemical Anchor (Stainless Steel A2)	M30 x 330 Ø 30

**(Diameter) x (Length) ø (Drill diameter) - mm*

TP SB A4 - Stud Bolt Chemical Anchor (Stainless Steel A4)

Item Number	Description	Size*
TP 7201	TP Stud Bolt Chemical Anchor (Stainless Steel A4)	M8 x 110 Ø 8
TP 7202	TP Stud Bolt Chemical Anchor (Stainless Steel A4)	M10 x 130 Ø 10
TP 7203	TP Stud Bolt Chemical Anchor (Stainless Steel A4)	M12 x 160 Ø 12
TP 7204	TP Stud Bolt Chemical Anchor (Stainless Steel A4)	M16 x 190 Ø 16
TP 7205	TP Stud Bolt Chemical Anchor (Stainless Steel A4)	M20 x 260 Ø 20
TP 7206	TP Stud Bolt Chemical Anchor (Stainless Steel A4)	M24 x 300 Ø 24
TP 7207	TP Stud Bolt Chemical Anchor (Stainless Steel A4)	M30 x 330 Ø 30

**(Diameter) x (Length) ø (Drill diameter) - mm*

TP Plastic Sleeve

Item Number	Description	Size*	Rod Size
TP 6275	TP Plastic Sleeve	M12 x 50	M6 - M8
TP 6276	TP Plastic Sleeve	M15 x 85	M8 - M10
TP 6277	TP Plastic Sleeve	M15 x 130	M8 - M10
TP 6278	TP Plastic Sleeve	M20 x 85	M12 - M16

**(Diameter) x (Length) ø (Drill diameter) - mm*

TP Metal Sleeve

Item Number	Description	Size*	Rod Size
TP 6279	TP Metal Sleeve	M12 x 1000	M6 - M8
TP 6280	TP Metal Sleeve	M16 x 1000	M10 - M12
TP 6281	TP Metal Sleeve	M22 x 1000	M12 - M16

**(Diameter) x (Length) ø (Drill diameter) - mm*


MECHANICAL
ANCHORS

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, wet or flooded drill hole 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 in indoor 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 ≥	Installation depth	Effective anchorage depth	Thickness of fixture ≤	Critical spacing	Critical edge distance	Minimum allowable spacing	Minimum allowable edge distance
	do	Tinst	hmin	h1	hnom	hef	tfix	Scr	Ccr	Smin	Cmin
	(mm)	[Nm]	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)
TP 11250	8	20	100	40	37	30	2	144	72	50	50
TP 11251				60	55	48	9				
TP 11252							29				
TP 11253							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							14				
TP 11263							24				
TP 11264							34				
TP 11265							54				
TP 11266							84				
TP 11267							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	cracked	C30/37	C40/45	C50/60		Uncracked	cracked	Uncracked	cracked
		NRk [kN]	NRk [kN]	Ψ [-]	Ψ [-]	Ψ [-]	γM [-]	VRk [kN]	VRk [kN]	γM [-]	γM [-]
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					11.00	12.00	1.25	
TP 11252	E										
TP 11253	G										
TP 11254	E	16.00	9.00	1.16	1.31	1.41	1.50	17.40	17.40	1.25	1.25
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	1.50
TP 11261	E	20.00	12.00						25.30		1.25
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										
TP 11272	K	50.00	30.00	1.16	1.31	1.41	1.50	73.10	72.00	1.25	1.50
TP 11273	M										
TP 11274	N	50.00	30.00				1.80	84.70	100.60	1.25	1.50
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	C2	C30/37	C40/45	C50/60	C1	C2	C1	C2	C1/C2
		NRk,P,seis	NRk [kN]	Ψ [-]	Ψ [-]	Ψ [-]	γM [-]	γM [-]	VRk [kN]	VRk [kN]	γM [-]
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	17.50	8.90	1.22	1.41	1.55	1.50	1.50	33.00	33.00	1.25
TP 11269	K										
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 – TP CCA-G

Item Number	Drill bit diameter	Torque	Minimum concrete thickness	Depth of drill hole ≥	Installation depth	Effective anchorage depth	Thickness of fixture ≤	Critical spacing	Critical edge distance	Minimum allowable spacing	Minimum allowable edge distance
	do	Tinst	hmin	h1	hnom	hef	tfix	Scr	Ccr	Smin	Cmin
	(mm)	[Nm]	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(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				60	55	48	12				
TP 11305							9				
TP 11306							29				
TP 11307							49				
TP 11308	10	40	100	60	53	45	5	180	90	60	60
TP 11309			120	75	68	60	10				
TP 11310							25				
TP 11311							35				
TP 11312							55				
TP 11313							85				
TP 11314							105				
TP 11315	12	60	100	65	60		4	210	105	70	70
TP 11316			140	85	80	70	14				
TP 11317							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 – TP CCA-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	cracked	C30/37	C40/45	C50/60		Uncracked	cracked	Uncracked	cracked
		NRk [kN]	NRk [kN]	Ψ [-]	Ψ [-]	Ψ [-]	γM [-]	VRk [kN]	VRk [kN]	γM [-]	γM [-]
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					11.00	12.00	1.25	
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	16.00	9.00								
TP 11310	F										
TP 11311	G										
TP 11312	H										
TP 11313	K										
TP 11314	L										
TP 11315	D	12.00	8.00	1.22	1.41	1.55	1.50	25.30	25.40	1.25	1.50
TP 11316	F	30.00	16.00						25.30		1.25
TP 11317	H										
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 ≥	Installation depth	Effective anchorage depth	Thickness of fixture ≤	Critical spacing	Critical edge distance	Minimum allowable spacing	Minimum allowable edge distance
	do	Tinst	hmin	h1	hnom	hef	tfix	Scr	Ccr	Smin	Cmin
	(mm)	[Nm]	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)
TP 11400	8	15	100	40	37	30	2	144	72	50	50
TP 11401				60	55	48	9				
TP 11402							29				
TP 11403							49				
TP 11404	10	40	100	60	53	45	5	180	90	60	60
TP 11405			120	75	68	60	25				
TP 11406							35				
TP 11407							55				
TP 11408							85				
TP 11409							105				
TP 11410	12	60	100	65	60	50	4	210	105	70	70
TP 11411			140	85	80	70	4				
TP 11412							14				
TP 11413							24				
TP 11414							34				
TP 11415							54				
TP 11416							84				
TP 11417							104				
TP 11418	16	100	170	105	97	85	28	255	128	128	128
TP 11419							58				
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	cracked	C30/37	C40/45	C50/60		Uncracked	cracked	Uncracked	cracked
		NRk [kN]	NRk [kN]	Ψ [-]	Ψ [-]	Ψ [-]	γM [-]	VRk [kN]	VRk [kN]	γM [-]	γM [-]
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					11.00	12.00	1.25	
TP 11402	E										
TP 11403	G										
TP 11404	E	16.00	9.00	1.16	1.31	1.41	1.50	17.40	17.40	1.25	1.25
TP 11405	F										
TP 11406	G										
TP 11407	H										
TP 11408	K										
TP 11409	L										
TP 11410	D	12.00	8.00	1.22	1.41	1.55	1.50	25.30	25.40	1.25	1.50
TP 11411	E	25.00	16.00						25.30		1.25
TP 11412	F										
TP 11413	G										
TP 11414	H										
TP 11415	I										
TP 11416	L										
TP 11417	M										
TP 11418	I	35.00	25.00	1.22	1.41	1.55	1.50	47.10	56.40	1.25	1.50
TP 11419	K										
TP 11420	O										
TP 11421	Q										
TP 11422	K	50.00	30.00	1.16	1.31	1.41	1.50	73.10	72.00	1.25	1.50
TP 11423	M										

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

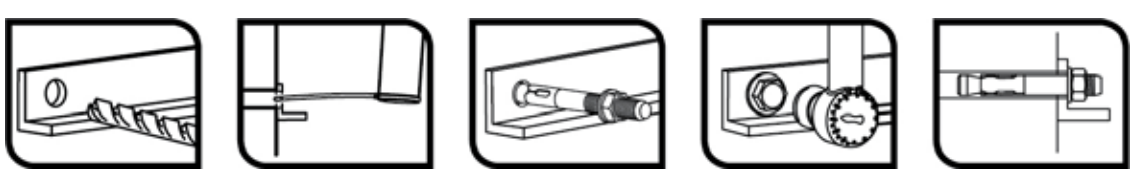
Item Number	Letter on head tip	Tension resistance in C20/25 concrete		Coefficient for higher concrete resistances			Tension partial safety coefficient		Shear resistance		Shear partial safety coefficient
		C1	C2	C30/37	C40/45	C50/60	C1	C2	C1	C2	C1/C2
		NRk,P,seis	NRk [kN]	Ψ [-]	Ψ [-]	Ψ [-]	γM [-]	γM [-]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

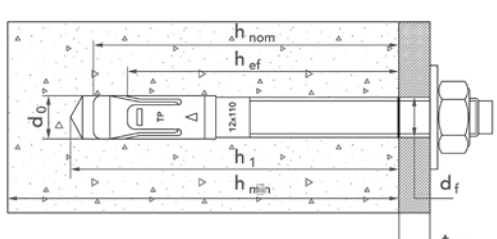
Anchor Material

No.	Designation	TP CCA	TP CCA-G	TP CCA-X
1	Anchor Body	Carbon steel, galvanized ≥ 5 µm	Carbon steel, sherardized ≥ 40 µm	Carbon steel, galvanized ≥ 5 µm
2	Expansion Clip	A4 stainless steel	A4 stainless steel	Carbon steel, sherardized ≥ 40 µm
3	Nut	DIN 934, galvanized ≥ 5 µm	DIN 934, sherardized ≥ 40 µm	DIN 934, galvanized ≥ 5 µm
4	Washer	DIN 125, DIN 9021, galvanized ≥ 5 µm	DIN 125, DIN 9021, sherardized ≥ 40 µm	DIN 125, DIN 9021, galvanized ≥ 5 µm

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





TP THROUGH BOLT ANCHORS

TP Cracked Concrete Anchor - TP CCA A4 - Option 1

Characteristics

- TP CCA A4 (AISI 316) Stainless steel is used in cracked and non-cracked concrete
- European Technical Approval (ETA) Option 1
- Approved for fire resistance R30 to R120
- Approved for seismic loads C1 and C2
- Used for medium loads, static or quasi-static loads
- TP CCA A4 has roughness working principle. Easy to install by using a controlled torque
- Available in variety of lengths and sizes, assembly flexibility. Size range M8 – M16

Application

- TP CCA A4 is used in Structural applications in cracked concrete in outdoor applications, including marine and industrial
- Uses to fix safety fences, steel beams, channels, machinery, boilers, signals, stadium seating, façade substructures, wood structures to concrete, etc.

TP CCA A4 (Stainless Steel)

Item Number	Description	Size*	Approval
TP 11500	TP CCA A4 Option 1 - Cracked Concrete	M8x68	ETA
TP 11501	TP CCA A4 Option 1 - Cracked Concrete	M8x75	ETA
TP 11502	TP CCA A4 Option 1 - Cracked Concrete	M8x90	ETA
TP 11503	TP CCA A4 Option 1 - Cracked Concrete	M8x115	ETA
TP 11504	TP CCA A4 Option 1 - Cracked Concrete	M8x135	ETA
TP 11505	TP CCA A4 Option 1 - Cracked Concrete	M8x165	ETA
TP 11506	TP CCA A4 Option 1 - Cracked Concrete	M10x90	ETA
TP 11507	TP CCA A4 Option 1 - Cracked Concrete	M10x105	ETA
TP 11508	TP CCA A4 Option 1 - Cracked Concrete	M10x115	ETA
TP 11509	TP CCA A4 Option 1 - Cracked Concrete	M10x135	ETA
TP 11510	TP CCA A4 Option 1 - Cracked Concrete	M10x155	ETA
TP 11511	TP CCA A4 Option 1 - Cracked Concrete	M10x185	ETA
TP 11512	TP CCA A4 Option 1 - Cracked Concrete	M12x110	ETA
TP 11513	TP CCA A4 Option 1 - Cracked Concrete	M12x120	ETA
TP 11514	TP CCA A4 Option 1 - Cracked Concrete	M12x130	ETA
TP 11515	TP CCA A4 Option 1 - Cracked Concrete	M12x145	ETA
TP 11516	TP CCA A4 Option 1 - Cracked Concrete	M12x170	ETA
TP 11517	TP CCA A4 Option 1 - Cracked Concrete	M12x200	ETA
TP 11518	TP CCA A4 Option 1 - Cracked Concrete	M16x130	ETA
TP 11519	TP CCA A4 Option 1 - Cracked Concrete	M16x150	ETA
TP 11520	TP CCA A4 Option 1 - Cracked Concrete	M16x185	ETA
TP 11521	TP CCA A4 Option 1 - Cracked Concrete	M16x220	ETA

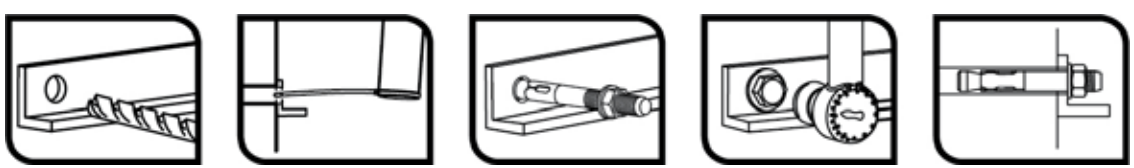
*(Diameter) x (Length) - mm

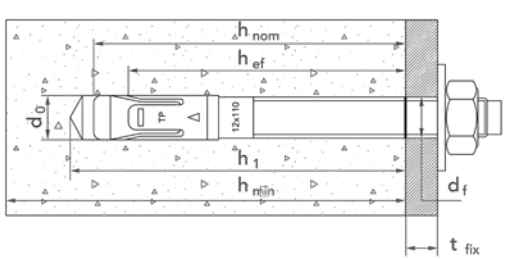
Anchor Material

No.	Designation	TP CCA A4
1	Anchor Body	A4 Stainless steel
2	Expansion Clip	A4 Stainless steel
3	Nut	DIN 934, A4 stainless steel
4	Washer	DIN 125, A4 stainless steel

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. Suitable for wet, dry or flooded drill holes.
- 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 .





Installation Parameters – TP CCA A4

Item Number	Drill bit diameter	Torque	Minimum concrete thickness	Depth of drill hole ≥	Installation depth	Effective anchorage depth	Thickness of fixture ≤	Critical spacing	Critical edge distance	Minimum allowable spacing	Minimum allowable edge distance
	do	Tinst	hmin	h1	hnom	hef	tfix	Scr	Ccr	Smin	Cmin
	(mm)	[Nm]	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)
TP 11500	8	20	100	70	54	48	4	144	72	50	50
TP 11501							10				
TP 11502							25				
TP 11503							50				
TP 11504							70				
TP 11505							100				
TP 11506	10	40	120	80	67	60	10	180	90	55	50
TP 11507							25				
TP 11508							35				
TP 11509							55				
TP 11510							75				
TP 11511							105				
TP 11512	12	60	150	100	81	72	10	216	108	60	60
TP 11513							20				
TP 11514							30				
TP 11515							45				
TP 11516							70				
TP 11517							100				
TP 11518	16	120	170	115	97	86	10	258	129	70	70
TP 11519							30				
TP 11520							60				
TP 11521							100				

Characteristic Resistance – TP CCA A4

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	cracked	C30/37	C40/45	C50/60		Uncracked	cracked	Uncracked	cracked
		NRk [kN]	NRk [kN]	Ψ [-]	Ψ [-]	Ψ [-]	γM [-]	VRk [kN]	VRk [kN]	γM [-]	γM [-]
TP 11500	A	9.00	5.00	1.22	1.41	1.55	1.50	11.90	12.00	1.30	1.50
TP 11501	B										
TP 11502	C										
TP 11503	D										
TP 11504	E										
TP 11505	G										
TP 11506	A	16.00	9.00	1.22	1.41	1.55	1.50	18.80	18.80	1.30	1.30
TP 11507	B										
TP 11508	C										
TP 11509	D										
TP 11510	E										
TP 11511	F										
TP 11512	A	20.00	12.00	1.22	1.41	1.55	1.50	27.40	27.40	1.30	1.30
TP 11513	B										
TP 11514	P										
TP 11515	C										
TP 11516	D										
TP 11517	E										
TP 11518	A	35.00	25.00	1.22	1.41	1.55	1.50	51.00	57.40	1.30	1.50
TP 11519	B										
TP 11520	C										
TP 11521	D										

Calculation example

Fixing a tension load of 500 kg (= 4.91 kN) in C30/37 cracked concrete using a TP CCA A4 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 * 1.22 / 1.5 = 7.32 kN

Verification: 6.87 < 7.32 kN
Result: The fixing is safe.

TP THROUGH BOLT ANCHORS

TP Mechanical Through Bolt Anchor - TP MTH - Option 7

Characteristics

- TP MTH is used in non-cracked concrete
- European Technical Approval (ETA) Option 7 for non-cracked Concrete
- It is made up of zinc plated material. Available in zinc plated & Stainless steel (A4)
- Assessed for two installation depths
- TP MTH has friction working principle. Easy to install by using a controlled torque
- Previous installation, or through the fixture
- Used for high loads, static or quasi-static loads
- TP MTH is used in dry, wet or flooded drill hole conditions
- Available in variety of lengths and sizes, assembly flexibility. Size range M6 – M20
- DIN 440 for fixing wood structures to concrete

Application

- TP MTH is used in Structural applications in non-cracked concrete
- Uses to fix safety barriers, billboards, machinery, boilers, signals, steel beams, etc.
- Fixing wood structures in concrete

Anchor Material

No.	Designation	Material for TP MTH	Material for TP MTH-A4
1	Anchor Body	Carbon steel wire rod, electro zinc plated ≥ 5 µm ISO 4042 A2, cold forged	Stainless steel, grade A4
2	Washer	DIN 125 or DIN 9021 electro zinc plated ≥ 5 µm ISO 4042 A2	DIN 125 or DIN 9021, stainless steel grade A4
3	Nut	DIN 934 electro zinc plated ≥ 5 µm ISO 4042 A2, class 6	DIN 934, stainless steel grade A4
4	Expansion Clip	Carbon steel strip, electro zinc plated ≥ 5 µm ISO 4042 A2	Stainless steel, grade A4

TP MTH zinc plated - option 7

Item Number	Description	Size*	Approval
TP 6022	TP MTH Option 7 - Non Cracked Concrete	M6x60	ETA
TP 6023	TP MTH Option 7 - Non Cracked Concrete	M6x70	ETA
TP 6024	TP MTH Option 7 - Non Cracked Concrete	M6x80	ETA
TP 6025	TP MTH Option 7 - Non Cracked Concrete	M6x90	ETA
TP 6026	TP MTH Option 7 - Non Cracked Concrete	M6x100	ETA
TP 6027	TP MTH Option 7 - Non Cracked Concrete	M6x110	ETA
TP 6028	TP MTH Option 7 - Non Cracked Concrete	M6x120	ETA
TP 6029	TP MTH Option 7 - Non Cracked Concrete	M6x130	ETA
TP 6030	TP MTH Option 7 - Non Cracked Concrete	M6x140	ETA
TP 6031	TP MTH Option 7 - Non Cracked Concrete	M6x150	ETA
TP 6032	TP MTH Option 7 - Non Cracked Concrete	M6x160	ETA
TP 6033	TP MTH Option 7 - Non Cracked Concrete	M6x170	ETA
TP 6034	TP MTH Option 7 - Non Cracked Concrete	M6x180	ETA
TP 6036	TP MTH Option 7 - Non Cracked Concrete	M8x60	ETA
TP 6037	TP MTH Option 7 - Non Cracked Concrete	M8x75	ETA
TP 6038	TP MTH Option 7 - Non Cracked Concrete	M8x90	ETA
TP 6039	TP MTH Option 7 - Non Cracked Concrete	M8x115	ETA
TP 6040	TP MTH Option 7 - Non Cracked Concrete	M8x130	ETA
TP 6041	TP MTH Option 7 - Non Cracked Concrete	M8x155	ETA
TP 6042	TP MTH Option 7 - Non Cracked Concrete	M10x70	ETA
TP 6043	TP MTH Option 7 - Non Cracked Concrete	M10x90	ETA
TP 6044	TP MTH Option 7 - Non Cracked Concrete	M10x120	ETA
TP 6045	TP MTH Option 7 - Non Cracked Concrete	M10x150	ETA
TP 6046	TP MTH Option 7 - Non Cracked Concrete	M10x170	ETA
TP 6047	TP MTH Option 7 - Non Cracked Concrete	M10x210	ETA
TP 6048	TP MTH Option 7 - Non Cracked Concrete	M10x230	ETA
TP 6050	TP MTH Option 7 - Non Cracked Concrete	M12x90	ETA
TP 6051	TP MTH Option 7 - Non Cracked Concrete	M12x110	ETA
TP 6052	TP MTH Option 7 - Non Cracked Concrete	M12x140	ETA
TP 6053	TP MTH Option 7 - Non Cracked Concrete	M12x160	ETA
TP 6054	TP MTH Option 7 - Non Cracked Concrete	M12x180	ETA
TP 6055	TP MTH Option 7 - Non Cracked Concrete	M12x220	ETA
TP 6056	TP MTH Option 7 - Non Cracked Concrete	M12x250	ETA
TP 6059	TP MTH Option 7 - Non Cracked Concrete	M14x120	ETA
TP 6060	TP MTH Option 7 - Non Cracked Concrete	M14x145	ETA
TP 6061	TP MTH Option 7 - Non Cracked Concrete	M14x170	ETA

*(Diameter) x (Length) - mm

TP MTH zinc plated - option 7

Item Number	Description	Size*	Approval
TP 6062	TP MTH Option 7 - Non Cracked Concrete	M14x220	ETA
TP 6063	TP MTH Option 7 - Non Cracked Concrete	M14x250	ETA
TP 6065	TP MTH Option 7 - Non Cracked Concrete	M16x125	ETA
TP 6066	TP MTH Option 7 - Non Cracked Concrete	M16x145	ETA
TP 6067	TP MTH Option 7 - Non Cracked Concrete	M16x170	ETA
TP 6068	TP MTH Option 7 - Non Cracked Concrete	M16x220	ETA
TP 6069	TP MTH Option 7 - Non Cracked Concrete	M16x250	ETA
TP 6070	TP MTH Option 7 - Non Cracked Concrete	M16x280	ETA
TP 6072	TP MTH Option 7 - Non Cracked Concrete	M20x170	ETA
TP 6073	TP MTH Option 7 - Non Cracked Concrete	M20x220	ETA
TP 6074	TP MTH Option 7 - Non Cracked Concrete	M20x270	ETA

*(Diameter) x (Length) - mm

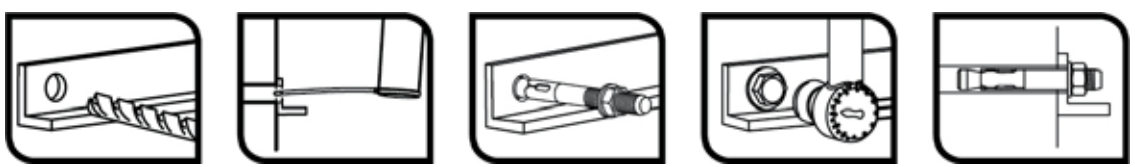
TP MTH-A4 - option 7 (Stainless Steel)

Item Number	Description	Size*	Approval
TP 6077	TP MTH-A4 Option 7 - Non Cracked Concrete	M6x45	
TP 6078	TP MTH-A4 Option 7 - Non Cracked Concrete	M6x60	ETA
TP 6079	TP MTH-A4 Option 7 - Non Cracked Concrete	M6x80	ETA
TP 6080	TP MTH-A4 Option 7 - Non Cracked Concrete	M8x50	
TP 6081	TP MTH-A4 Option 7 - Non Cracked Concrete	M8x75	ETA
TP 6082	TP MTH-A4 Option 7 - Non Cracked Concrete	M8x90	ETA
TP 6083	TP MTH-A4 Option 7 - Non Cracked Concrete	M8x115	ETA
TP 6084	TP MTH-A4 Option 7 - Non Cracked Concrete	M10x70	ETA
TP 6085	TP MTH-A4 Option 7 - Non Cracked Concrete	M10x90	ETA
TP 6086	TP MTH-A4 Option 7 - Non Cracked Concrete	M10x120	ETA
TP 6087	TP MTH-A4 Option 7 - Non Cracked Concrete	M10x150	ETA
TP 6088	TP MTH-A4 Option 7 - Non Cracked Concrete	M12x75	
TP 6089	TP MTH-A4 Option 7 - Non Cracked Concrete	M12x90	ETA
TP 6090	TP MTH-A4 Option 7 - Non Cracked Concrete	M12x110	ETA
TP 6091	TP MTH-A4 Option 7 - Non Cracked Concrete	M12x140	ETA
TP 6092	TP MTH-A4 Option 7 - Non Cracked Concrete	M16x90	
TP 6093	TP MTH-A4 Option 7 - Non Cracked Concrete	M16x145	ETA
TP 6094	TP MTH-A4 Option 7 - Non Cracked Concrete	M16x170	ETA
TP 6095	TP MTH-A4 Option 7 - Non Cracked Concrete	M20x120	
TP 6096	TP MTH-A4 Option 7 - Non Cracked Concrete	M20x170	ETA
TP 6097	TP MTH-A4 Option 7 - Non Cracked Concrete	M20x220	ETA

*(Diameter) x (Length) - mm

Installation Procedure

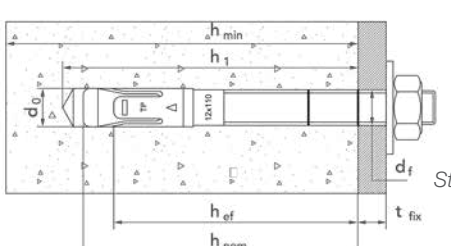
- The concrete to be well compacted, e.g. without significant voids
- Base material temperatures during installation: -5 / + 50°C (80°C in a short period of time). Anchors to be installed ensuring not less than the specified embedment depth, the edge distance and spacing to be kept to the specified values, no minus tolerances to be allowed
- Drill to the minimum depth and diameter specified, maintaining perpendicular to the surface of the base material. Fixture holes themselves can be used as template
- When drilling holes, care to be taken not to damage reinforcement in close proximity to the hole's position. Action to be taken in the event that drilling is aborted, e.g. due to encountering reinforcement. It is recommended to either install the anchors immediately beside the aborted drill hole, provided that anchoring depth is increased by the depth of the aborted drill hole, or make a new drilling at a minimum distance away of two the depth of the aborted hole. Alternatively, a smaller distance may be chosen, provided the aborted drill hole is filled with high strength mortar. However, unless the aborted drill hole is filled with mortar, it is not permissible under a shear or oblique tension load to be closer than the installation depth hnom in the direction of load application
- Thoroughly clean hole from dust and drilling fragments. For holes to be subjected to temperatures below 0 °C, measures to be taken to avoid the ingress of water into the hole and subsequent risk of local cracking of the concrete due to ice expansion
- To introduce the anchor into the hole up to the embedment depth through the fixture. A hammer can be used to ensure this depth. Do not apply any intermediate lay between the fixture and the washer (sealant, etc.). Apply the specified torque with a torque wrench
- In case of fixture holes with diameters higher than specified, use washers of bigger diameter and thickness, but in this case it is not assured a correct distribution of shear loads amongst all the anchors of a same group. The shear load will be applied on those anchors with the correct diameter on the fixture



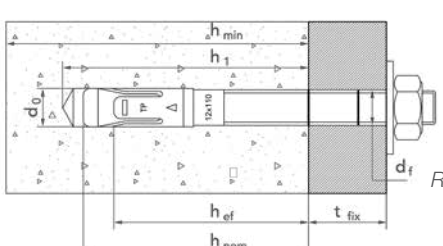
Installation Parameters

TP MTH A4 (Stainless steel)

	General Installation Parameters					Standard installation depth/Reduced installation depth --/--				
Item Number	Drill bit diameter	Fixture clearance hole	Torque	Minimum allowable spacing	Minimum allowable edge distance	Minimum concrete thickness	Depth of drill hole ≥	Installation depth	Effective anchorage depth	Thickness of fixture ≤
	do	df	Tinst	Smin	Cmin	hmin	h1	hnom	hef	tfix
	(mm)	(mm)	[Nm]	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)
TP 6077	6	7	7	50	50	--/100	--/40	--/35	--/25	-
TP 6078						100/--	55/--	49.5/--	40/--	2/-
TP 6079										22/-
TP 6080	8	9	20	65	65	--/100	--/40	--/35	--/23	-
TP 6081						100/100	65/50	59.5/46.5	48/35	5/18
TP 6082										20/33
TP 6083										45/58
TP 6084	10	12	35	70	70	--/100	--/60	--/53.5	--/42	-/3
TP 6085						110/100	75/60	66.5/53.5	55/42	10/23
TP 6086										40/53
TP 6087										70/83
TP 6088	12	14	60	85	85	--/100	--/60	--/55	--/43	-
TP 6089						--/100	--/70	--/62	--/50	-/13
TP 6090						130/100	85/70	77/62	65/50	18/33
TP 6091										48/63
TP 6092	16	18	120	110	110	--/100	--/75	--/69	--/49	-
TP 6093						168/--	110/--	103.5/--	84/--	23/-
TP 6094										48/-
TP 6095	20	22	240	135	135	--/145	--/105	--/93	--/71	-
TP 6096						206/--	135/--	125/--	103/--	23/-
TP 6097										73/-



Standard embedment depth



Reduce embedment depth (M8, M10 and M12)

Installation Parameters

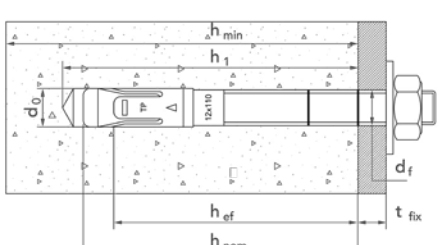
TP MTH (Zinc electroplated steel)

	General Installation Parameters					Standard installation depth/Reduced installation depth --/--				
Item Number	Drill bit diameter	Fixture clearance hole	Torque	Minimum allowable spacing	Minimum allowable edge distance	Minimum concrete thickness	Depth of drill hole ≥	Installation depth	Effective anchorage depth	Thickness of fixture ≤
	do	df	Tinst	Smin	Cmin	hmin	h1	hnom	hef	tfix
	(mm)	(mm)	[Nm]	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)
TP 6022	6	7	7	50	50	100/--	55/--	49.5/--	40/--	2/-
TP 6023										12/-
TP 6024										22/-
TP 6025										32/-
TP 6026										42/-
TP 6027										52/-
TP 6028										62/-
TP 6029										72/-
TP 6030										82/-
TP 6031										92/-
TP 6032										102/-
TP 6033										112/-
TP 6034										122/-
TP 6036	8	9	20	65	65	100/100	65/50	59.5/46.5	48/35	-/3
TP 6037										5/18
TP 6038										20/33
TP 6039										45/58
TP 6040										60/73
TP 6041										85/98
TP 6042	10	12	35	70	70	110/100	75/60	66.5/53.5	55/42	-/3
TP 6043										10/23
TP 6044										40/53
TP 6045										70/83
TP 6046										90/103
TP 6047										130/143
TP 6048										150/163

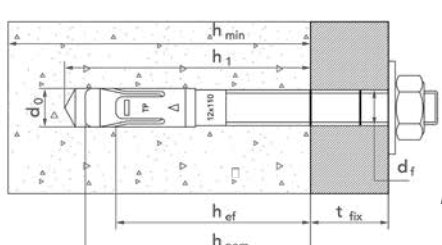
Installation Parameters

TP MTH (Zinc electroplated steel)

	General Installation Parameters					Standard installation depth/Reduced installation depth --/--				
Item Number	Drill bit diameter	Fixture clearance hole	Torque	Minimum allowable spacing	Minimum allowable edge distance	Minimum concrete thickness	Depth of drill hole ≥	Installation depth	Effective anchorage depth	Thickness of fixture ≤
	do	df	Tinst	Smin	Cmin	hmin	h1	hnom	hef	tfix
	(mm)	(mm)	[Nm]	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)
TP 6050	12	14	60	85	85	130/100	85/70	77/62	65/50	-/13
TP 6051										18/33
TP 6052										48/63
TP 6053										68/83
TP 6054										88/103
TP 6055										128/143
TP 6056										158/173
TP 6059	14	16	90	100	100	150/--	100/--	91/--	75/--	12/-
TP 6060										37/-
TP 6061										62/-
TP 6062										112/-
TP 6063										142/-
TP 6065	16	18	120	110	110	168/--	110/--	103.5/--	84/--	3/-
TP 6066										23/-
TP 6067										48/-
TP 6068										98/-
TP 6069										128/-
TP 6070										158/-
TP 6072	20	22	240	135	135	206/--	135/--	125/--	103/--	23/-
TP 6073										73/-
TP 6074										123/-



Standard embedment depth



Reduce embedment depth (M8, M10 and M12)

Characteristic Resistance

Characteristic resistances* in concrete C20/25** for an isolated anchor (without spacing and edge distances effects)

Characteristic Resistance				M6	M8	M10	M12	M14	M16	M20
TP MTH										
Zinc plated steel	Standard	Tension $N_{R,k}$	KN	7.7	12.0	16.0	25.0	30.0	35.0	50.0
		Shear $V_{R,K}$	KN	5.1	9.3	14.7	20.6	28.1	38.4	56.3
	Reduced	Tension $N_{R,k}$	KN	-	9.0	12.0	16.0	-	-	-
		Shear $V_{R,K}$	KN	-	10.4	13.7	17.8	-	-	-
TP MTH-A4										
Stainless steel, grade A4	Standard	Tension $N_{R,k}$	KN	10.1	12.0	16.0	25.0	-	35.0	50.0
		Shear $V_{R,K}$	KN	6.0	10.9	17.4	25.2	-	47.1	73.5
	Reduced	Tension $N_{R,k}$	KN	-	9.0	12.0	16.0	-	-	-
		Shear $V_{R,K}$	KN	-	10.4	13.7	17.8	-	-	-

** The characteristic resistance of an anchor that has a 95% probability to be achieved in a tension test. It depends on the mean ultimate resistance, the number of tests and the scatter of the results.*

*** Concrete C20/25 per ENV206: characteristic resistance for a specimen ≥ 28 days old:*
Cylindrical sample ø 150 mm x 300 height ≥ 20 N/mm2
Cubic sample 150 mm side ≥ 25 N/mm2

Underlined values correspond to steel failure.

Characteristic resistance for tension and shear must be considered separately.

Recommended Safety Factor

Characteristic Resistance		Resistance safety coefficients		Load increase safety coefficient
		Concrete failure	Steel failure	
Zinc plated steel	Tension	1.8	1.4	1.4
	Shear	1.5	1.25	
Stainless steel, grade A4	Tension	1.8	1.68	

Calculation example

Fixing a load tension of 2,000 kg ≈ 20 KN.
Using two MTH M14 anchors

Increasing coefficient for loads: 1.4
Pull load characteristic resistance for standard depth MTH M14anchor: 30.0 KN
Concrete reduction for resistances coefficient: 1.8
Verification: Increased load ≤ reduced resistance = 20 KN x 1.4 ≤ 2 x 30.0 KN / 1.8 = 28KN ≤ 33.3KN
Result: The fixing is safe.

Recommended Load

Standard Depth									Reduced Embedment Depth		
			M6	M8	M10	M12	M14	M16	M20	M8	M10	M12
Tension	Steel Failure	Characteristic (KN)	7.70	16.40	25.60	35.40	51.70	65.00	104.40	16.40	25.60	35.40
		gamma s	1.40	1.40	1.40	1.43	1.43	1.43	1.47	1.40	1.40	1.43
		Design (KN)	5.50	11.71	18.29	24.76	36.15	45.45	71.02	11.71	18.29	24.76
	Pull-out	Characteristic (KN)	-	12.00	16.00	25.00	30.00	35.00	50.00	9.00	12.00	16.00
		gamma s	-	1.50	1.80	1.80	1.80	1.80	1.80	1.50	1.50	1.50
		Design (KN)	-	8.00	8.89	13.89	16.67	19.44	27.78	6.00	8.00	10.67
	Concrete	Characteristic (KN)	12.70	16.70	20.50	26.40	32.70	38.80	52.60	10.40	13.70	17.80
		gamma s	1.50	1.50	1.80	1.80	1.80	1.80	1.80	1.50	1.80	1.80
		Design (KN)	8.47	11.13	11.39	14.67	18.17	21.56	29.22	6.93	7.61	9.89
Failure			5.50	8.00	8.89	13.89	16.67	19.44	27.78	6.00	7.61	9.89
Standard Depth										**Reduced Embedment Depth**		
Shear	Steel Failure	Characteristic (KN)	5.10	9.30	14.70	20.60	28.10	38.40	56.30	9.30	14.70	20.60
		gamma s	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
		Design (KN)	4.08	7.44	11.76	16.48	22.48	30.72	45.04	7.44	11.76	16.48
	Steel failure with lever arm	Characteristic (KN)	7.70	19.10	38.10	64.10	102.20	163.10	298.50	19.10	38.10	64.10
		gamma s	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
		Design (KN)	6.16	15.28	30.48	51.28	81.76	130.48	238.80	15.28	30.48	51.28
	Pry-out	K	1.00	1.00	1.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00
		Characteristic (KN)	12.70	16.70	20.50	52.80	65.40	77.60	105.20	10.40	13.70	17.80
		gamma s	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
		Design (KN)	8.47	11.13	13.67	35.20	43.60	51.73	70.13	6.93	9.13	11.87
Failure			4.08	7.44	11.76	16.48	22.48	30.72	45.04	6.93	9.13	11.87
Standard Depth										**Reduced Embedment Depth**		
Catalogue Recommended Loads		Tension (KN)	4.00	5.82	6.47	10.11	12.14	14.16	20.23	4.37	5.54	7.20
		Shear (KN)	2.97	5.42	8.56	12.00	16.37	22.37	32.79	5.05	6.65	8.64

TP THROUGH BOLT ANCHORS

TP Non-cracked Concrete Anchor – TP NCA - Option 7

Characteristics

- TP NCA is used in non-cracked concrete
- European Technical Approval (ETA) Option 7 for non-cracked Concrete
- It is made up of zinc plated material. Available in zinc plated & Stainless steel (A4)
- Assessed for two installation depths
- TP NCA has friction working principle. Easy to install by using a controlled torque
- Previous installation, or through the fixture
- Used for high loads, static or quasi-static loads
- TP NCA is used in dry, wet or flooded drill hole conditions
- Available in variety of lengths and sizes, assembly flexibility. Size range M6 – M20
- DIN 440 for fixing wood structures to concrete

Application

- TP NCA is used in Structural applications in non-cracked concrete
- Uses to fix safety barriers, billboards, machinery, boilers, signals, steel beams, etc.
- Fixing wood structures in concrete

TP NCA (Galvanized)

Item Number	Description	Size*	Approval
TP 11600	TP NCA Option 7 - Non Cracked Concrete	M6x60	ETA
TP 11601	TP NCA Option 7 - Non Cracked Concrete	M6x70	ETA
TP 11602	TP NCA Option 7 - Non Cracked Concrete	M6x80	ETA
TP 11603	TP NCA Option 7 - Non Cracked Concrete	M6x90	ETA
TP 11604	TP NCA Option 7 - Non Cracked Concrete	M6x100	ETA
TP 11605	TP NCA Option 7 - Non Cracked Concrete	M6x110	ETA
TP 11606	TP NCA Option 7 - Non Cracked Concrete	M6x120	ETA
TP 11607	TP NCA Option 7 - Non Cracked Concrete	M6x130	ETA
TP 11608	TP NCA Option 7 - Non Cracked Concrete	M6x140	ETA
TP 11609	TP NCA Option 7 - Non Cracked Concrete	M6x150	ETA
TP 11610	TP NCA Option 7 - Non Cracked Concrete	M6x160	ETA
TP 11611	TP NCA Option 7 - Non Cracked Concrete	M6x170	ETA
TP 11612	TP NCA Option 7 - Non Cracked Concrete	M6x180	ETA
TP 11613	TP NCA Option 7 - Non Cracked Concrete	M8x60	ETA
TP 11614	TP NCA Option 7 - Non Cracked Concrete	M8x75	ETA
TP 11615	TP NCA Option 7 - Non Cracked Concrete	M8x90	ETA
TP 11616	TP NCA Option 7 - Non Cracked Concrete	M8x100	ETA
TP 11617	TP NCA Option 7 - Non Cracked Concrete	M8x115	ETA
TP 11618	TP NCA Option 7 - Non Cracked Concrete	M8x120	ETA
TP 11619	TP NCA Option 7 - Non Cracked Concrete	M8x130	ETA
TP 11620	TP NCA Option 7 - Non Cracked Concrete	M8x155	ETA
TP 11621	TP NCA Option 7 - Non Cracked Concrete	M10x70	ETA
TP 11622	TP NCA Option 7 - Non Cracked Concrete	M10x80	ETA
TP 11623	TP NCA Option 7 - Non Cracked Concrete	M10x90	ETA
TP 11624	TP NCA Option 7 - Non Cracked Concrete	M10x100	ETA
TP 11625	TP NCA Option 7 - Non Cracked Concrete	M10x120	ETA
TP 11626	TP NCA Option 7 - Non Cracked Concrete	M10x140	ETA
TP 11627	TP NCA Option 7 - Non Cracked Concrete	M10x150	ETA
TP 11628	TP NCA Option 7 - Non Cracked Concrete	M10x160	ETA

*(Diameter) x (Length) - mm

TP NCA (Galvanized)

Item Number	Description	Size*	Approval
TP 11629	TP NCA Option 7 - Non Cracked Concrete	M10x170	ETA
TP 11630	TP NCA Option 7 - Non Cracked Concrete	M10x210	ETA
TP 11631	TP NCA Option 7 - Non Cracked Concrete	M10x230	ETA
TP 11632	TP NCA Option 7 - Non Cracked Concrete	M12x90	ETA
TP 11633	TP NCA Option 7 - Non Cracked Concrete	M12x100	ETA
TP 11634	TP NCA Option 7 - Non Cracked Concrete	M12x110	ETA
TP 11635	TP NCA Option 7 - Non Cracked Concrete	M12x120	ETA
TP 11636	TP NCA Option 7 - Non Cracked Concrete	M12x130	ETA
TP 11637	TP NCA Option 7 - Non Cracked Concrete	M12x140	ETA
TP 11638	TP NCA Option 7 - Non Cracked Concrete	M12x160	ETA
TP 11639	TP NCA Option 7 - Non Cracked Concrete	M12x180	ETA
TP 11640	TP NCA Option 7 - Non Cracked Concrete	M12x200	ETA
TP 11641	TP NCA Option 7 - Non Cracked Concrete	M12x220	ETA
TP 11642	TP NCA Option 7 - Non Cracked Concrete	M12x250	ETA
TP 11643	TP NCA Option 7 - Non Cracked Concrete	M14x120	ETA
TP 11644	TP NCA Option 7 - Non Cracked Concrete	M14x145	ETA
TP 11645	TP NCA Option 7 - Non Cracked Concrete	M14x170	ETA
TP 11646	TP NCA Option 7 - Non Cracked Concrete	M14x220	ETA
TP 11647	TP NCA Option 7 - Non Cracked Concrete	M14x250	ETA
TP 11648	TP NCA Option 7 - Non Cracked Concrete	M16x125	ETA
TP 11649	TP NCA Option 7 - Non Cracked Concrete	M16x145	ETA
TP 11650	TP NCA Option 7 - Non Cracked Concrete	M16x170	ETA
TP 11651	TP NCA Option 7 - Non Cracked Concrete	M16x220	ETA
TP 11652	TP NCA Option 7 - Non Cracked Concrete	M16x250	ETA
TP 11653	TP NCA Option 7 - Non Cracked Concrete	M16x280	ETA
TP 11654	TP NCA Option 7 - Non Cracked Concrete	M20x170	ETA
TP 11655	TP NCA Option 7 - Non Cracked Concrete	M20x220	ETA
TP 11656	TP NCA Option 7 - Non Cracked Concrete	M20x270	ETA

*(Diameter) x (Length) - mm

TP NCA A4 (Stainless Steel)

Item Number	Description	Size*	Approval
TP 11700	TP NCA A4 Option 7 - Non Cracked Concrete	M6x45	
TP 11701	TP NCA A4 Option 7 - Non Cracked Concrete	M6x60	ETA
TP 11702	TP NCA A4 Option 7 - Non Cracked Concrete	M6x80	ETA
TP 11703	TP NCA A4 Option 7 - Non Cracked Concrete	M8x50	
TP 11704	TP NCA A4 Option 7 - Non Cracked Concrete	M8x75	ETA
TP 11705	TP NCA A4 Option 7 - Non Cracked Concrete	M8x90	ETA
TP 11706	TP NCA A4 Option 7 - Non Cracked Concrete	M8x115	ETA
TP 11707	TP NCA A4 Option 7 - Non Cracked Concrete	M10x70	ETA
TP 11708	TP NCA A4 Option 7 - Non Cracked Concrete	M10x90	ETA
TP 11709	TP NCA A4 Option 7 - Non Cracked Concrete	M10x120	ETA
TP 11710	TP NCA A4 Option 7 - Non Cracked Concrete	M10x150	ETA
TP 11711	TP NCA A4 Option 7 - Non Cracked Concrete	M12x75	
TP 11712	TP NCA A4 Option 7 - Non Cracked Concrete	M12x90	ETA
TP 11713	TP NCA A4 Option 7 - Non Cracked Concrete	M12x110	ETA
TP 11714	TP NCA A4 Option 7 - Non Cracked Concrete	M12x140	ETA
TP 11715	TP NCA A4 Option 7 - Non Cracked Concrete	M16x90	
TP 11716	TP NCA A4 Option 7 - Non Cracked Concrete	M16x145	ETA
TP 11717	TP NCA A4 Option 7 - Non Cracked Concrete	M16x170	ETA
TP 11718	TP NCA A4 Option 7 - Non Cracked Concrete	M20x120	
TP 11719	TP NCA A4 Option 7 - Non Cracked Concrete	M20x170	ETA
TP 11720	TP NCA A4 Option 7 - Non Cracked Concrete	M20x220	ETA

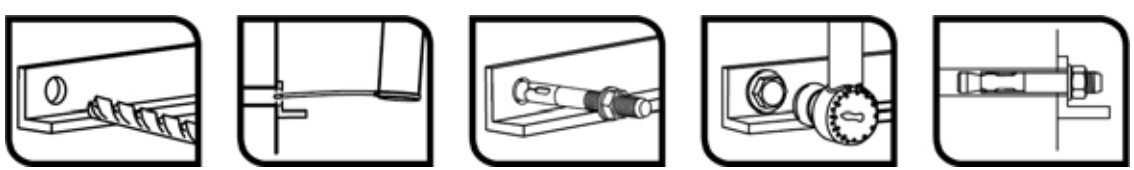
**(Diameter) x (Length) - mm*

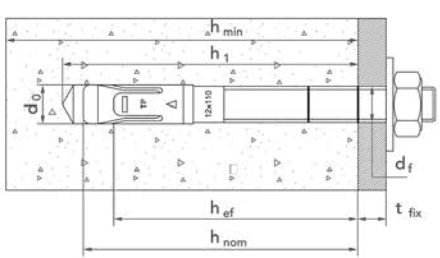
Anchor Material

No.	Designation	Material for TP NCA	Material for TP NCA-A4
1	Anchor Body	Carbon steel wire rod, electro zinc plated ≥ 5 µm ISO 4042 A2, cold forged	Stainless steel, grade A4
2	Washer	DIN 125 or DIN 9021 electro zinc plated ≥ 5 µm ISO 4042 A2	DIN 125 or DIN 9021, stainless steel grade A4
3	Nut	DIN 934 electro zinc plated ≥ 5 µm ISO 4042 A2, class 6	DIN 934, stainless steel grade A4
4	Expansion Clip	Carbon steel strip, electro zinc plated ≥ 5 µm ISO 4042 A2	Stainless steel, grade A4

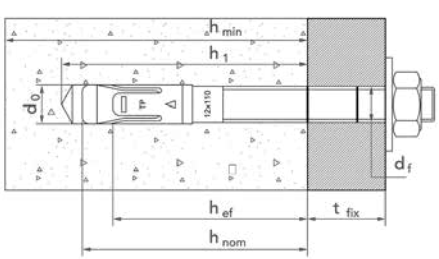
Installation Procedure

- The concrete to be well compacted, e.g. without significant voids
- Base material temperatures during installation: -5 / + 50°C (80°C in a short period of time). Anchors to be installed ensuring not less than the specified embedment depth, the edge distance and spacing to be kept to the specified values, no minus tolerances to be allowed
- Drill to the minimum depth and diameter specified, maintaining perpendicular to the surface of the base material. Fixture holes themselves can be used as template
- When drilling holes, care to be taken not to damage reinforcement in close proximity to the hole's position. Action to be taken in the event that drilling is aborted, e.g. due to encountering reinforcement. It is recommended to either install the anchors immediately beside the aborted drill hole, provided that anchoring depth is increased by the depth of the aborted drill hole, or make a new drilling at a minimum distance away of two the depth of the aborted hole. Alternatively, a smaller distance may be chosen, provided the aborted drill hole is filled with high strength mortar. However, unless the aborted drill hole is filled with mortar, it is not permissible under a shear or oblique tension load to be closer than the installation depth hnom in the direction of load application
- Thoroughly clean hole from dust and drilling fragments. For holes to be subjected to temperatures below 0 °C, measures to be taken to avoid the ingress of water into the hole and subsequent risk of local cracking of the concrete due to ice expansion
- To introduce the anchor into the hole up to the embedment depth through the fixture. A hammer can be used to ensure this depth. Do not apply any intermediate lay between the fixture and the washer (sealant, etc.). Apply the specified torque with a torque wrench
- In case of fixture holes with diameters higher than specified, use washers of bigger diameter and thickness, but in this case it is not assured a correct distribution of shear loads amongst all the anchors of a same group. The shear load will be applied on those anchors with the correct diameter on the fixture





Standard embedment depth



Reduce embedment depth (M8, M10 and M12)

Installation Parameters TP NCA zinc plated Option 7

	General Installation Parameters				
Item Number	Drill bit diameter	Fixture clearance hole	Torque	Minimum allowable spacing	Minimum allowable edge distance
	do	df	Tinst	Smin	Cmin
	(mm)	(mm)	(Nm)	(mm)	(mm)
TP 11600	6	7	7	35	35
TP 11601					
TP 11602					
TP 11603					
TP 11604					
TP 11605					
TP 11606					
TP 11607					
TP 11608					
TP 11609					
TP 11610					
TP 11611					
TP 11612					
TP 11613	8	9	20	40	40
TP 11614					
TP 11615					
TP 11616					
TP 11617					
TP 11618					
TP 11619					
TP 11620					
TP 11621	10	12	35	50	50
TP 11622					
TP 11623					
TP 11624					
TP 11625					
TP 11626					
TP 11627					
TP 11628					

Installation Parameters TP NCA zinc plated Option 7

	General Installation Parameters				
Item Number	Drill bit diameter	Fixture clearance hole	Torque	Minimum allowable spacing	Minimum allowable edge distance
	do	df	Tinst	Smin	Cmin
	(mm)	(mm)	(Nm)	(mm)	(mm)
TP 11629	10	12	35	50	50
TP 11630					
TP 11631					
TP 11632	12	14	60	70	70
TP 11633					
TP 11634					
TP 11635					
TP 11636					
TP 11637					
TP 11638					
TP 11639					
TP 11640					
TP 11641					
TP 11642					
TP 11643	14	16	90	80	80
TP 11644					
TP 11645					
TP 11646					
TP 11647					
TP 11648	16	18	120	90	90
TP 11649					
TP 11650					
TP 11651					
TP 11652					
TP 11653					
TP 11654	20	22	240	135	135
TP 11655					
TP 11656					

Installation Parameters TP NCA zinc plated Option 7

	Standard installation depth/Reduced installation depth--/--								
Item Number	Minimum concrete thickness	Depth of drill hole ≥	Installation depth	Effective anchorage depth	Thickness of fixture ≤	Critical spacing (concrete cone)	Critical edge distance (concrete cone)	Critical spacing (splitting)	Critical edge distance (splitting)
	hmin	h1	hnom	hef	tfix	Scr,N	Ccr,N	Scr,sp	Ccr,sp
	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)
TP 11600	100/--	55/--	49.5/--	40/--	2/--	120/--	60/--	160/--	80/--
TP 11601					12/--				
TP 11602					22/--				
TP 11603					32/--				
TP 11604					42/--				
TP 11605					52/--				
TP 11606					62/--				
TP 11607					72/--				
TP 11608					82/--				
TP 11609					92/--				
TP 11610					102/--				
TP 11611					112/--				
TP 11612					122/--				
TP 11613	--/100	--/50	--/46.5	--/35	--/3	--/105	--/53	--/140	--/70
TP 11614	100/100	65/50	59.5/46.5	48/35	5/18	144/105	72/53	192/140	96/70
TP 11615					20/33				
TP 11616					30/43				
TP 11617					45/58				
TP 11618					50/63				
TP 11619					60/73				
TP 11620					85/98				
TP 11621	--/100	--/60	--/53.5	--/42	--/3	--/126	--/63	--/168	--/84
TP 11622	--/100	--/60	--/53.5	--/42	--/13	--/126	--/63	--/168	--/84
TP 11623	110/100	75/60	66.5/53.5	55/42	10/23	165/126	83/63	220/168	110/84
TP 11624					20/33				
TP 11625					40/53				
TP 11626					60/73				
TP 11627					70/83				
TP 11628					80/93				

Installation Parameters TP NCA zinc plated Option 7

	Standard installation depth/Reduced installation depth--/--								
Item Number	Minimum concrete thickness	Depth of drill hole ≥	Installation depth	Effective anchorage depth	Thickness of fixture ≤	Critical spacing (concrete cone)	Critical edge distance (concrete cone)	Critical spacing (splitting)	Critical edge distance (splitting)
	hmin	h1	hnom	hef	tfix	Scr,N	Ccr,N	Scr,sp	Ccr,sp
	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)
TP 11629	110/100	75/60	66.5/53.5	55/42	90/103	165/126	83/63	220/168	110/84
TP 11630					130/143				
TP 11631					150/163				
TP 11632	--/100	--/70	--/62	--/50	--/13	--/150	--/75	--/200	--/100
TP 11633	130/100	85/70	77/62	65/50	8/23	195/150	98/75	260/200	130/100
TP 11634					18/33				
TP 11635					28/43				
TP 11636					38/53				
TP 11637					48/63				
TP 11638					68/83				
TP 11639					88/103				
TP 11640					108/123				
TP 11641					128/143				
TP 11642					158/173				
TP 11643	150/--	100/--	91/--	75/--	12/--	225/--	113/--	300/--	150/--
TP 11644					37/--				
TP 11645					62/--				
TP 11646					112/--				
TP 11647					142/--				
TP 11648	168/130	110/90	103.5/84.5	84/65	3/22	252/195	126/98	280/260	140/130
TP 11649					23/42				
TP 11650					48/67				
TP 11651					98/117				
TP 11652					128/147				
TP 11653					158/177				
TP 11654	206/150	135/107	125/97	103/75	23/49	309/225	155/113	360/300	180/150
TP 11655					73/99				
TP 11656					123/149				

Load Table - TP NCA zinc Plated Option 7

	Characteristic Resistance		Design Resistance		Maximum Recommended Load	
Item Number	Standard Installation Depth / Reduced Installation Depth		Standard Installation Depth / Reduced Installation Depth		Standard Installation Depth / Reduced Installation Depth	
	Tension [kN]	Shear [kN]	Tension [kN]	Shear [kN]	Tension [kN]	Shear [kN]
	NRk	VRk	NRd	VRd	Nrec	Vrec
TP 11600	7.4/--	5.1/--	5.3/--	4.1/--	3.8/--	2.9/--
TP 11601						
TP 11602						
TP 11603						
TP 11604						
TP 11605						
TP 11606						
TP 11607						
TP 11608						
TP 11609						
TP 11610						
TP 11611						
TP 11612						
TP 11613	--/10	--/10.4	--/6.7	--/7	--/4.8	--/5
TP 11614	13/10	9.3/10.4	9.2/6.7	7.4/7	6.6/4.8	5.3/5
TP 11615						
TP 11616						
TP 11617						
TP 11618						
TP 11619						
TP 11620						
TP 11621	--/13.7	--/13.7	--/9.1	--/9.1	--/6.5	--/6.5
TP 11622						
TP 11623	19/13.7	14.7/13.7	12.7/9.1	11.8/9.1	9/6.5	8.4/6.5
TP 11624						
TP 11625						
TP 11626						
TP 11627						
TP 11628						

Load Table - TP NCA zinc Plated Option 7

	Characteristic Resistance		Design Resistance		Maximum Recommended Load	
Item Number	Standard Installation Depth / Reduced Installation Depth		Standard Installation Depth / Reduced Installation Depth		Standard Installation Depth / Reduced Installation Depth	
	Tension [kN]	Shear [kN]	Tension [kN]	Shear [kN]	Tension [kN]	Shear [kN]
	NRk	VRk	NRd	VRd	Nrec	Vrec
TP 11629	19/13.7	14.7/13.7	12.7/9.1	11.8/9.1	9/6.5	8.4/6.5
TP 11630						
TP 11631						
TP 11632	--/17.8	--/17.8	--/11.9	--/11.9	--/8.5	--/8.5
TP 11633	26.4/17.8	20.6/17.8	17.6/11.9	16.4/11.9	12.6/8.5	11.8/8.5
TP 11634						
TP 11635						
TP 11636						
TP 11637						
TP 11638						
TP 11639						
TP 11640						
TP 11641						
TP 11642						
TP 11643	32.8/--	28.1/--	21.8/--	22.5/--	15.6/--	16/--
TP 11644						
TP 11645						
TP 11646						
TP 11647						
TP 11648	38.8/26.4	38.4/38.4	25.9/17.6	30.7/30.7	18.5/12.6	21.9/21.9
TP 11649						
TP 11650						
TP 11651						
TP 11652						
TP 11653						
TP 11654	52.7/32.8	56.3/65.6	35.1/21.8	45.1/43.7	25.1/15.6	32.1/31.2
TP 11655						
TP 11656						

Installation Parameters TP NCA A4 Option 7

	General Installation Parameters				
Item Number	Drill bit diameter	Fixture clearance hole	Torque	Minimum allowable spacing	Minimum allowable edge distance
	do	df	Tisnt	Smin	Cmin
	(mm)	(mm)	(Nm)	(mm)	(mm)
TP 11700	6	7	7	50	50
TP 11701					
TP 11702					
TP 11703	8	9	20	65	65
TP 11704					
TP 11705					
TP 11706					
TP 11707	10	12	35	70	70
TP 11708					
TP 11709					
TP 11710					
TP 11711	12	14	60	85	85
TP 11712					
TP 11713					
TP 11714					
TP 11715	16	18	120	110	110
TP 11716					
TP 11717					
TP 11718	20	22	240	135	135
TP 11719					
TP 11720					

Installation Parameters TP NCA A4 Option 7

Item Number	Standard installation depth/Reduced installation depth--/--								
	Minimum concrete thickness	Depth of drill hole ≥	Installation depth	Effective anchorage depth	Thickness of fixture ≤	Critical spacing (concrete cone)	Critical edge distance (concrete cone)	Critical spacing (splitting)	Critical edge distance (splitting)
	hmin	h1	hnom	hef	tfix	Scr,N	Ccr,N	Scr,sp	Ccr,sp
	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)
TP 11700	--/100	--/40	--/35	--/25	--/1	--/75	--/38	--/160	--/80
TP 11701	100/--	55/--	49.5/--	40/--	2/--	120/--	60/--	160/--	80/--
TP 11702					22/--				
TP 11703	--/100	--/40	--/35	--/23	--/4	--/69	--/35	--/140	--/70
TP 11704	100/100	65/50	59.5/46.5	48/35	5/8	144/105	72/53	192/140	96/70
TP 11705					20/23				
TP 11706					45/58				
TP 11707	--/100	--/60	--/53.5	--/42	--/3	--/126	--/63	--/168	--/84
TP 11708	110/100	75/60	66.5/53.5	55/42	10/23	165/126	83/63	220/168	110/84
TP 11709					40/53				
TP 11710					70/83				
TP 11711	--/100	--/60	--/55	--/43	--/5	--/129	--/65	--/200	--/100
TP 11712	--/100	--/70	--/62	--/50	--/13	--/150	--/75	--/200	--/100
TP 11713	130/100	85/70	77/62	65/50	18/33	195/150	98/75	260/200	130/100
TP 11714					48/63				
TP 11715	--/100	--/75	--/69	--/49	--/4	--/147	--/74	--/280	--/140
TP 11716	168/--	110/--	103.5/--	84/--	23/--	252/--	126/--	336/--	168/--
TP 11717					48/--				
TP 11718	--/145	--/105	--/93	--/71	--/5	--/213	--/107	--/360	--/180
TP 11719	206/--	135/--	125/--	103/--	23/--	309/--	155/--	412/--	206/--
TP 11720					73/--				

Load Table - TP NCA A4 Option 7

Item Number	Characteristic Resistance		Design Resistance		Maximum Recommended Load	
	Standard Installation Depth / Reduced Installation Depth		Standard Installation Depth / Reduced Installation Depth		Standard Installation Depth / Reduced Installation Depth	
	Tension [kN]	Shear [kN]	Shear [kN]	Shear [kN]	Tension [kN]	Shear [kN]
	NRk	VRk	Vrec	VRd	Nrec	VRd
TP 11700	--/6.3	--/6	--/4.2	--/3.9	--/3	--/2.8
TP 11701	10.1/--	6/--	6/--	3.9/--	4.3/--	2.8/--
TP 11702						
TP 11703	--/5.5	--/5.5	--/3.1	--/3.7	--/2.2	--/2.6
TP 11704	12/9	10.9/10.4	8/5	7.1/7	5.7/3.6	5.1/4.9
TP 11705						
TP 11706						
TP 11707	--/12	--/13.7	--/6.7	--/9.1	--/4.8	--/6.5
TP 11708	16/12	17.4/13.7	8.9/6.7	11.4/9.1	6.3/4.8	8.2/6.5
TP 11709						
TP 11710						
TP 11711	--/14.2	--/14.2	--/7.9	--/9.5	--/5.6	--/6.7
TP 11712	--/16	--/17.8	--/8.9	--/11.9	--/6.4	--/8.5
TP 11713	25/16	25.2/17.8	13.9/8.9	16.6/11.9	9.9/6.4	11.8/8.5
TP 11714						
TP 11715	--/17.3	--/17.3	--/9.6	--/11.5	--/6.8	--/8.2
TP 11716	35/--	47.1/--	19.4/--	31/--	13.9/--	22.1/--
TP 11717						
TP 11718	--/30.2	--/60.4	--/16.7	--/40.2	--/12	--/28.7
TP 11719	50/--	73.5/--	27.8/--	48.3/--	19.8/--	34.5/--
TP 11720						

TP DROP IN ANCHOR

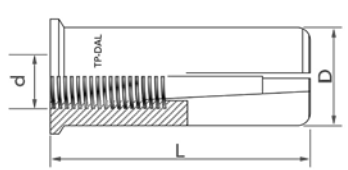
TP DA & TP DAL

Product Description

- European approval for non-structural applications in cracked and non-cracked concrete
- R30 to R120 Fire Approval
- Functioning by deformation
- Installation prior to the material to be fixed
- Bolt can be disassembled so that the surface of the base material is smooth
- Bolt is not included

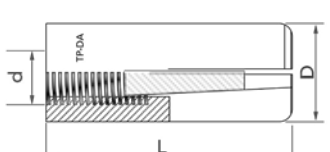
TP DA : TP Drop in Anchor (Zinc Plated), has an ETA approval for non-structural application

Item Number	Description	Size	Approval
TP 6761	TP Drop in Anchor (Zinc Plated)	TP DA M06	✓
TP 6762	TP Drop in Anchor (Zinc Plated)	TP DA M08	✓
TP 6763	TP Drop in Anchor (Zinc Plated)	TP DA M10	✓
TP 6764	TP Drop in Anchor (Zinc Plated)	TP DA M12	✓
TP 6765	TP Drop in Anchor (Zinc Plated)	TP DA M16	✓
TP 6766	TP Drop in Anchor (Zinc Plated)	TP DA M20	✓



TP DAL : TP Drop in Anchor (Zinc Plated with flatted lip), has an ETA approval for non-structural application

Item Number	Description	Size	Approval
TP 6767	TP Drop in Anchor (Zinc Plated with flatted lip)	TP DAL M06	✓
TP 6768	TP Drop in Anchor (Zinc Plated with flatted lip)	TP DAL M08	✓
TP 6769	TP Drop in Anchor (Zinc Plated with flatted lip)	TP DAL M10	✓
TP 6770	TP Drop in Anchor (Zinc Plated with flatted lip)	TP DAL M12	✓
TP 6771	TP Drop in Anchor (Zinc Plated with flatted lip)	TP DAL M16	✓



TP DA-A4 : TP Drop in Anchor (Stainless steel A4), not approved

Item Number	Description	Size
TP 6772	TP Drop in Anchor (Stainless steel A4)	TP DA-A4 M06
TP 6773	TP Drop in Anchor (Stainless steel A4)	TP DA-A4 M08
TP 6774	TP Drop in Anchor (Stainless steel A4)	TP DA-A4 M10
TP 6775	TP Drop in Anchor (Stainless steel A4)	TP DA-A4 M12
TP 6776	TP Drop in Anchor (Stainless steel A4)	TP DA-A4 M16
TP 6777	TP Drop in Anchor (Stainless steel A4)	TP DA-A4 M20

Application

- Fixing suspended ceilings, sprinklers and ventilation systems
- Structural fixing, inner and outer iron works
- Fixing threaded bars

Anchor Material

No.	Name	Size	Component	Material
1	TP DA	M6 to M20	Capsule Cone	Carbon steel Carbon steel Coating: zinc ≥ 5 µm
2	TP DAL	M6 to M20	Capsule Cone	Carbon steel Carbon steel Coating: zinc ≥ 5 µm
3	TP DA-A4	M6 to M20	Capsule Cone	Stainless steel A4 Stainless steel A4

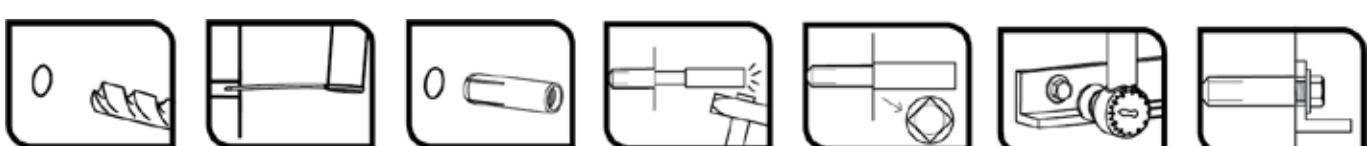
Accessories

Manual installation tool used for Drop in anchor (TP DI-HS)

Item Number	Description	Size
TP 6268	TP Manual setting tool	TP DI-HSM06
TP 6269	TP Manual setting tool	TP DI-HSM08
TP 6270	TP Manual setting tool	TP DI-HSM10
TP 6271	TP Manual setting tool	TP DI-HSM12
TP 6272	TP Manual setting tool	TP DI-HSM16
TP 6273	TP Manual setting tool	TP DI-HSM20

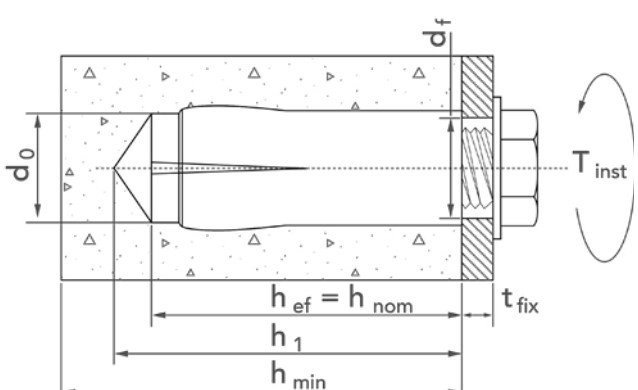
Installation Procedure

- Check the concrete base is well compacted and porosity insignificant. Dry and wet drills allowed. Drill at hammer or percussion position. Respect specified diameter and depth
- Blow and clean hole from dust and drill debris using air pump and brush
- Introduce the anchor in the hole completely. Use hammer if necessary. The anchor must not stand out of the surface of the base material
- Insert the expansion tool into the inner cone of the anchor. Hammer until the setting tool is levelled with the anchor
- Put the material to be fixed and insert the bolt or stud through holes. Use a bolt with the correct length. Wide washers are recommended (DIN 9021). Do not introduce any materials between the material to be fixed and the washer (sealants, etc.). Apply the nominal torque using dynamometric wrench



Installation Parameters

Installation parameters			M6	M8	M10	M12	M16	M20
d_o	Nominal diameter of drill bit	mm	8	10	12	15	20	25
D	Thread diameter	mm	M6	M8	M10	M12	M16	M20
d_f	Fixture clearance hole diameter	mm	7	9	12	14	18	22
T_{inst}	Maximum installation torque	Nm	4	11	17	38	60	100
$l_{s,min}$	Minimum screwing depth	mm	6	8	10	12	16	20
$l_{s,max}$	Maximum screwing depth	mm	10	13	17	21	27	34
h_{min}	Minimum Thickness of concrete member	mm	100	100	100	100	130	160
h_1	Depth of drilled hole	mm	27	33	43	54	70	86
h_{nom}	Overall anchor embedment depth in the concrete	mm	25	30	40	50	65	80
h_{ef}	Effective anchorage depth	mm	25	30	40	50	65	80
S_{min}	Minimum allowable spacing	mm	60	60	80	100	130	160
C_{min}	Minimum allowable distance	mm	105	105	140	175	230	280
	Installation tool	-	TP DI-HSM06	TP DI-HSM08	TP DI-HSM10	TP DI-HSM12	TP DI-HSM16	TP DI-HSM20



Characteristic Resistance

Characteristic resistance in non-cracked concrete C20/25 for an isolated anchor (no spacing and edge distance effects) with bolt class 6.8 or A4-70

Characteristic Resistance				M6	M8	M10	M12	M16	M20
TP DA	N_{RK}	Tension Characteristic resistance	KN	6.30	8.30	12.70	17.80	26.40	36.10
	Ψ	Concrete coefficient C30/37	-	1.02	1.22	1.15	1.15	1.22	1.19
	Ψ	Concrete coefficient C40/45	-	1.04	1.41	1.29	1.28	1.41	1.35
	Ψ	Concrete coefficient C50/60	-	1.05	1.55	1.37	1.37	1.55	1.46
	γ_M	Tension partial safety factor	-	1.80	1.80	2.10	2.10	2.10	2.10
	V_{RK}	Shear Characteristic resistance	KN	6.30	8.30	9.10	17.80	32.50	47.50
	γ_M	Shear partial safety factor	-	1.50	1.50	1.25	1.50	1.25	1.25
TP DAL	N_{RK}	Tension Characteristic resistance	KN	6.30	8.30	12.70	17.80	26.40	-
	Ψ	Concrete coefficient C30/37	-	1.02	1.22	1.15	1.15	1.22	-
	Ψ	Concrete coefficient C40/45	-	1.04	1.41	1.29	1.28	1.41	-
	Ψ	Concrete coefficient C50/60	-	1.05	1.55	1.37	1.37	1.55	-
	γ_M	Tension partial safety factor	-	1.80	1.80	2.10	2.10	2.10	-
	V_{RK}	Shear Characteristic resistance	KN	6.30	8.30	9.10	17.80	32.50	-
	γ_M	Shear partial safety factor	-	1.50	1.50	1.25	1.50	1.25	-
TP DA-A4	N_{RK}	Tension Characteristic resistance	KN	5.00	6.60	10.20	14.30	21.10	28.80
	Ψ	Concrete coefficient C30/37	-	1.02	1.22	1.15	1.15	1.22	1.19
	Ψ	Concrete coefficient C40/45	-	1.04	1.41	1.29	1.28	1.41	1.35
	Ψ	Concrete coefficient C50/60	-	1.05	1.55	1.37	1.37	1.55	1.46
	γ_M	Tension partial safety factor	-	2.10	2.10	2.10	2.10	2.10	2.10
	V_{RK}	Shear Characteristic resistance	KN	6.30	8.30	10.50	17.80	32.10	52.00
	γ_M	Shear partial safety factor	-	1.50	1.50	1.52	1.50	1.52	1.52

Characteristic resistance in non-structural applications in concrete C20/25 to C50/60 (cracked and non-cracked) for an isolated anchor (no spacing and edge distance effects) with bolt class 6.8

Characteristic Resistance				M6	M8	M10	M12	M16	M20
TP DA	F_{RK}	Resistance to any direction (C20/25 to C50/60)	KN	2.00	3.00	5.00	7.50	12.00	20.00
	γ_M	Partial safety factor	-	1.80	1.80	2.10	2.10	2.10	2.10
TP DAL	F_{RK}	Resistance to any direction (C20/25 to C50/60)	KN	2.00	3.00	5.00	7.50	12.00	-
	γ_M	Partial safety factor	-	1.80	1.80	2.10	2.10	2.10	-

Calculation example

Fixing a 400kg tensile load (= 3.92 kN) in non-cracked concrete C30/37 with TP DA M10 anchor and bolt class 6.8

Calculation:
The safe load coefficient recommended is γF = 1.4
Verification to be performed: Design Load calculation < Resistance of calculation
Design load calculation = service load * safe load coefficient = 3.92 * 1.4 = 5.49 kN
Resistance of calculation = Characteristic resistance * Concrete coefficient / tension partial safety factor = 12.7*1.15 / 2.1 = 6.95 kN

Verification: 5.49 kN < 6.95 kN

Result: The fixing is safe.

TP SHIELD ANCHOR

TP SH, TP SH-A4, TP SH-B, TP SH-TF, TP SH-EB & TP SH-H

Product Description

- Male thread metallic anchor, with functioning principle by expansion and installation by controlled torque
- Use in non-cracked concrete, use for high loads
- Easy assembly, anchor must be installed before the fixture

TP SH : TP Shield Anchor (Zinc Plated)

Item Number	Description	Size*
TP 6000	TP Shield Anchor (Zinc Plated)	M06 x 40 ø 10
TP 6001	TP Shield Anchor (Zinc Plated)	M08 x 50 ø 14
TP 6002	TP Shield Anchor (Zinc Plated)	M10 x 60 ø 16
TP 6003	TP Shield Anchor (Zinc Plated)	M12 x 80 ø 20
TP 6004	TP Shield Anchor (Zinc Plated)	M16 x 100 ø 25

** (Inner Diameter) x (Effective depth) ø (Drill diameter) - mm*

TP SH-A4 : TP Shield Stainless steel A4

Item Number	Description	Size*
TP 11800	TP Shield Stainless steel A4	M06 x 40 ø 10
TP 6005	TP Shield Stainless steel A4	M08 x 50 ø 14
TP 6006	TP Shield Stainless steel A4	M10 x 60 ø 16
TP 6007	TP Shield Stainless steel A4	M12 x 80 ø 20

**(Inner Diameter) x (Effective depth) ø (Drill diameter) - mm*

TP SH-B : TP Shield Loose Bolt 6.8 (Zinc Plated)

Item Number	Description	Size*
TP 11801	TP Shield Loose Bolt 6.8 (Zinc Plated)	M06 x 40 ø 10
TP 6008	TP Shield Loose Bolt 6.8 (Zinc Plated)	M08 x 50 ø 14
TP 6009	TP Shield Loose Bolt 6.8 (Zinc Plated)	M10 x 60 ø 16
TP 6010	TP Shield Loose Bolt 6.8 (Zinc Plated)	M12 x 80 ø 20
TP 6011	TP Shield Loose Bolt 6.8 (Zinc Plated)	M16 x 100 ø 25

*(Inner Diameter) x (Effective depth) ø (Drill diameter) - mm

TP SH-TF : TP Shield Projecting Bolt (Zinc Plated)

Item Number	Description	Size*
TP 11802	TP Shield Projecting Bolt (Zinc Plated)	M06 x 40 ø 10
TP 6012	TP Shield Projecting Bolt (Zinc Plated)	M08 x 50 ø 14
TP 6013	TP Shield Projecting Bolt (Zinc Plated)	M10 x 60 ø 16
TP 6014	TP Shield Projecting Bolt (Zinc Plated)	M12 x 80 ø 20

* (Inner Diameter) x (Effective depth) ø (Drill diameter) - mm

TP SH-EB : TP Shield Eye Bolt (Zinc Plated)

Item Number	Description	Size*
TP 11803	TP Shield Eye Bolt (Zinc Plated)	M06 x 40 ø 10
TP 6015	TP Shield Eye Bolt (Zinc Plated)	M08 x 50 ø 14
TP 6016	TP Shield Eye Bolt (Zinc Plated)	M10 x 60 ø 16
TP 6017	TP Shield Eye Bolt (Zinc Plated)	M12 x 80 ø 20

*(Inner Diameter) x (Effective depth) ø (Drill diameter) - mm

TP SH-H : TP Shield Hook Bolt (Zinc Plated)

Item Number	Description	Size*
TP 11804	TP Shield Hook Bolt (Zinc Plated)	M06 x 40 ø 10
TP 6018	TP Shield Hook Bolt (Zinc Plated)	M08 x 50 ø 14
TP 6019	TP Shield Hook Bolt (Zinc Plated)	M10 x 60 ø 16
TP 6020	TP Shield Hook Bolt (Zinc Plated)	M12 x 80 ø 20

*(Inner Diameter) x (Effective depth) ø (Drill diameter) - mm

Application

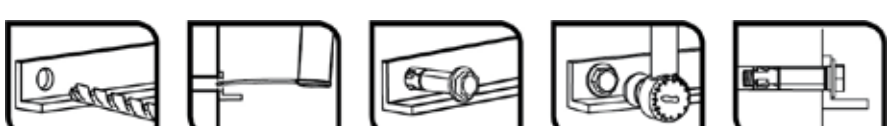
- Fixing signs, racks, panels, gates, handrails, street furniture and fence posts.

Anchor Material

No.	Name	Size	Component	Material
1	TP SH	M6 to M16	Capsule	Carbon steel, zinc plated ≥ 5 µm
2	TP SH-A4	M6 to M12	Capsule	Stainless steel A4
3	TP SH-B	M6 to M16	Capsule / Screw / Washer	Carbon steel, zinc plated ≥ 5 µm
4	TP SH-TF	M6 to M12	Capsule / Stud / Washer	Carbon steel, zinc plated ≥ 5 µm
5	TP SH-EB	M6 to M12	Capsule / Eye / Washer	Carbon steel, zinc plated ≥ 5 µm
6	TP SH-H	M6 to M12	Capsule / Hook / Washer	Carbon steel, zinc plated ≥ 5 µm

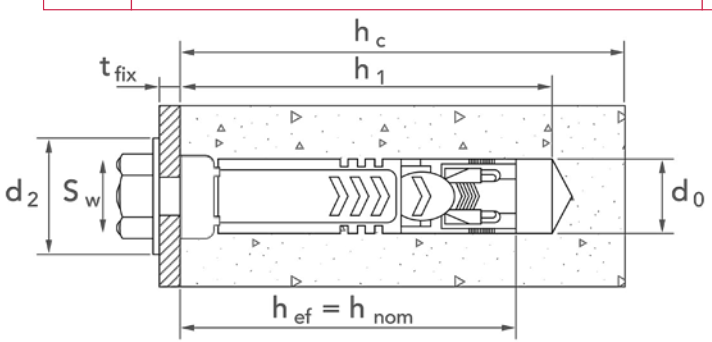
Installation Procedure

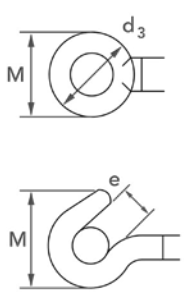
- Check the concrete base is well compacted and porosity insignificant. Dry, wet or flooded drills allowed.
  Drill at hammer position. Respect specified diameter and depth
- Blow and clean hole from dust and drill debris using air pump and brush
- Introduce the anchor in the hole completely, until the red ring mark is flat with concrete surface. Use hammer if necessary
- Put the material to be fixed and insert the bolt or stud through holes. Use a bolt with the correct length. Do not introduce any materials between the material to be fixed and the washer (sealants, etc.). Apply the nominal torque using dynamometric wrench

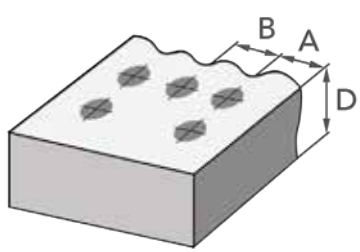


Installation Parameters

Installation parameters			M6	M8	M10	M12	M16
d_o	Drill diameter	mm	10	14	16	20	25
d_2	Washer diameter	mm	18	20	23.5	30	40
h_{nom}	Embedment depth	mm	40	50	60	80	100
h_{ef}	Effective depth	mm	40	50	60	80	100
h_1	Drill depth ≤	mm	45	60	70	90	110
h_c	Base material thickness ≤	mm	100	100	120	160	200
S_{sp}	Critical spacing (splitting)	mm	240	300	360	480	600
C_{sp}	Critical edge distance (splitting)	mm	120	150	180	240	300
S_{cr}	Critical spacing (concrete cone)	mm	120	150	180	240	300
C_{cr}	Critical edge distance (concrete cone)	mm	60	75	90	120	150
S_{min}	Minimum spacing	mm	60	75	90	120	150
C_{min}	Minimum edge distance	mm	60	75	90	120	150
T_{inst}	Installation torque	Nm	10	25	50	85	120
t_{fix}	Maximum fixture thickness	mm	8.5	8.5	8.0	17.5	17.0
d_3	Interior eye diameter	mm	10	12	14	17	-
e	Hook minimum gap	mm	10	11	14	18	-
S_w	Nut key	mm	10	13	17	19	24







Characteristic Resistance

Characteristic resistance in non-cracked concrete C20 / 25 for an isolated anchor (no effects edge distance or distances between anchors) is indicated in the following table:

Characteristic Resistance			M6	M8	M10	M12	M16
TP SH-B : TP Shield Loose bolt 6.8	$N_{R,K}$: tension	KN	3.43	3.92	12.57	14.75	20.65
	$V_{R,K}$: shear	KN	6.00	11.00	17.40	25.30	47.10
TP SH-A4 : TP Shield Stainless steel A4	$N_{R,K}$: tension	KN	3.43	3.92	8.82	10.78	-
	$V_{R,K}$: shear	KN	7.00	12.80	20.30	29.50	-
TP SH-TF : TP Shield Projecting Bolt	$N_{R,K}$: tension	KN	3.43	3.92	12.57	14.75	20.65
	$V_{R,K}$: shear	KN	4.20	7.70	12.20	17.70	-
TP SH-EB : TP Shield Eye Bolt	$N_{R,K}$: tension	KN	4.20	9.30	15.80	16.90	-
	$V_{R,K}$: shear	KN	-	-	-	-	-
TP SH-H : TP Shield Hook Bolt	$N_{R,K}$: tension	KN	1.64	3.20	5.00	8.10	-
	$V_{R,K}$: shear	KN	-	-	-	-	-

**Underline and cursive values correspond to steel failure.*

Design Load

Design Load			M6	M8	M10	M12	M16
TP SH-B : TP Shield Loose bolt 6.8	N_{Rd} : tension	KN	1.91	2.18	6.98	8.19	11.47
	V_{Rd} : shear	KN	4.80	8.80	13.92	20.24	37.68
TP SH-A4 : TP Shield Stainless steel A4	N_{Rd} : tension	KN	1.91	2.18	4.90	5.99	-
	V_{Rd} : shear	KN	4.49	8.21	13.01	18.91	-
TP SH-TF : TP Shield Projecting Bolt	N_{Rd} : tension	KN	1.91	2.18	6.98	8.19	11.47
	V_{Rd} : shear	KN	3.36	6.16	9.76	14.16	-
TP SH-EB : TP Shield Eye Bolt	N_{Rd} : tension	KN	2.80	5.17	10.53	11.27	-
	V_{Rd} : shear	KN	-	-	-	-	-
TP SH-H : TP Shield Hook Bolt	N_{Rd} : tension	KN	1.09	2.13	3.33	5.40	-
	V_{Rd} : shear	KN	-	-	-	-	-

**Underline and cursive values correspond to steel failure.*

Recommended Load

Recommended Load			M6	M8	M10	M12	M16
TP SH-B : TP Shield Loose bolt 6.8	N_{recom} : tension	KN	1.40	1.60	5.00	5.90	8.20
	V_{recom} : shear	KN	3.40	6.30	9.90	14.50	26.90
TP SH-A4 : TP Shield Stainless steel A4	N_{recom} : tension	KN	1.40	1.60	3.50	4.30	-
	V_{recom} : shear	KN	3.20	5.90	9.30	13.50	-
TP SH-TF : TP Shield Projecting Bolt	N_{recom} : tension	KN	1.40	1.60	5.00	5.90	8.20
	V_{recom} : shear	KN	2.40	4.40	7.00	10.10	-
TP SH-EB : TP Shield Eye Bolt	N_{recom} : tension	KN	2.00	3.70	7.50	8.00	-
	V_{recom} : shear	KN	-	-	-	-	-
TP SH-H : TP Shield Hook Bolt	N_{recom} : tension	KN	0.78	1.50	2.38	3.90	-
	V_{recom} : shear	KN	-	-	-	-	-

**Underline and cursive values correspond to steel failure.*

TP HOLLOW CORE ANCHOR

TP CHC

Product Description

- European approval for interior non-structural applications in hollow slabs
- R30 to R120 Fire Approval
- The anchor collar stops it from entering the hole, making installation easy
- Suitable for installations with reduced distances
- Suitable for the use of volts or threaded rods with metric threads

TP CHC : TP Hollow Core Anchor (Zinc Plated), has an ETA approval for interior non-structural applications in hollow slabs

Item Number	Description	Size	Approval
TP 6494	TP Hollow Core Anchor (Zinc Plated)	TP CHC M06	✓
TP 6495	TP Hollow Core Anchor (Zinc Plated)	TP CHC M08	✓
TP 6496	TP Hollow Core Anchor (Zinc Plated)	TP CHC M10	✓

Application

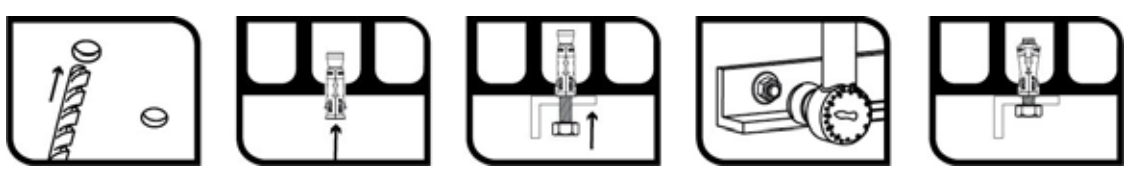
- Fixing suspended ceilings, sprinklers and ventilation systems
- Fixing pipe work and cable ducts

Anchor Material

Name	Size	Component	Material
TP CHC	M6 to M10	Expansion sleeve Cone	Carbon steel strip, electro zinc plated ≥ 5 µm ISO 4042 A2 Carbon steel wire rod, electro zinc plated ≥ 5 µm ISO 4042 A2

Installation Procedure

- Check the concrete base is well compacted and porosity insignificant. Dry, humid and flooded drills allowed. Drill at hammer or percussion position. Respect specified diameter and depth
- Introduce the anchor to the bottom of the drill hole. Use hammer if necessary. The anchor must not stand out of the surface of the base material
- Put the material to be fixed and insert the bolt or stud through holes. Use a bolt with the correct length. Wide washers are recommended (DIN 9021). Do not introduce any materials between the material to be fixed and the washer (sealants, etc.). Apply the nominal torque using dynamometric wrench



Safety in case of fire

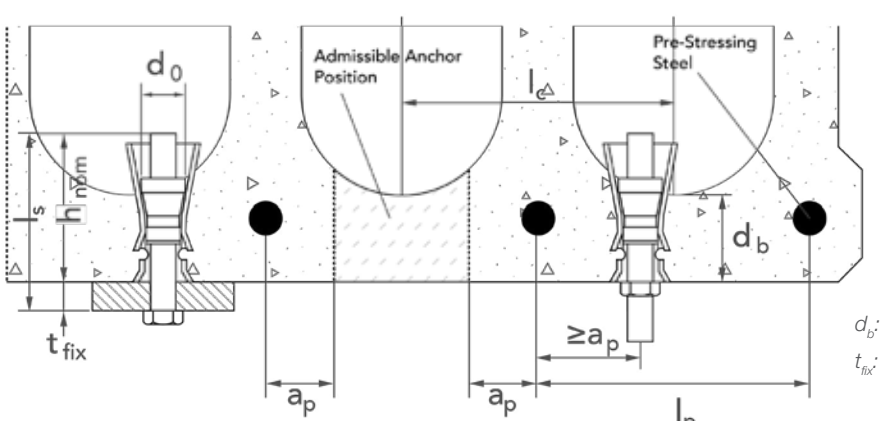
Reaction to fire has been assessed according to commission Decision 96/603/EC, amended by 2000/605/EC.

Reaction to fire*	M6	M8	M10
	Class A1		

**For characteristic resistance under fire exposure in ≥C40/50 prestressed hollow core slabs for use in non-structural applications in concrete, check our ETA approval*

Installation Parameters

Installation parameters			M6	M8	M10
d_o	Nominal diameter of drill bit	mm	10	12	16
D	Thread Diameter	mm	M6	M8	M10
d_f	Fixture clearance hole diameter	mm	7	9	12
T_{inst}	Installation Torque	Nm	10	20	30
h_1	Depth of drilled hole ≥	mm	45	50	60
h_{nom}	Overall anchor embedment depth in the base material	mm	38	44	53
l_c	Core distance ≥	mm	100	100	100
l_p	Prestressing steel distance ≥	mm	100	100	100
a_p	Distance between anchor position and prestressing reinforcement steel ≥	mm	50	50	50
l_s	Minimum length of bolt	mm	tfix+40	tfix+46	tfix+55
	Minimum steel class of bolt		6.8 ISO 898-1		
S_{min}	Minimum allowable spacing	mm	100	100	100
C_{min}	Minimum allowable edge distance	mm	60	70	80



d_b: Minimum thickness of prestressed hollow core concrete slab

t_{fix}: Thickness of fixture

Characteristic values of resistance

Characteristic resistances for non-structural applications in hollow concrete slabs type db ≥ 25; <30 mm with minimum thickness of 30 mm and for an isolated anchor (without consideration of edge distances or distances between anchors), with bolt class 6.8

Characteristic values of resistance to loads of design method B						
				M6	M8	M10
F^0_{RK}	Characteristic resistance in ≥ C40/50 prestressed hollow core slab	db ≥ 25 ; < 30mm	KN	3.5	5.0	8.0
		db ≥ 30 ; < 40mm	KN	7.0	10.0	10.0
		db ≥ 40mm	KN	8.5	11.5	14.0
γ_M	Partial safety factor*		-	1.8	1.5	1.8
S_{cr}	Characteristic spacing		mm	200	200	200
C_{cr}	Characteristic edge distance		mm	100	100	100

In absence of other national regulations

Calculation example

Fixing a 400kg tensile load (= 3.92 kN) on a C40/50 hollow concrete slab with 43mm thickness with an TP CHC M10 anchor and bolt class 6.8

Calculation: The safe load coefficient recommended is γF = 1.4
Verification to be performed: Load calculation < Resistance of calculation
Load calculation = service load * safe load coefficient = 3.92 * 1.4 = 5.49 kN
Resistance of calculation = characteristic resistance / partial safety coefficient = 14.0 / 1.8 = 7.78 kN

Verification: 5.49 kN < 7.78 kN

Result: The fixing is safe.

TP STEEL FRAME ANCHOR

TP FAS

Product Description

- TP FAS is a metal frame anchor, excellent for the spaced fixing and fireproof application
- Suitable for both solid base material (concrete, stone, solid brick, solid block, etc.) and for hollow base material (hollow brick, perforated brick, etc.)
- Anti-spin lateral wings to avoid the anchor from spinning while expanding

Item Number	Description	Size
TP 6341	TP Steel Frame Anchor	M06 x 72 ø 10
TP 6342	TP Steel Frame Anchor	M06 x 92 ø 10
TP 6343	TP Steel Frame Anchor	M06 x 112 ø 10
TP 6344	TP Steel Frame Anchor	M06 x 132 ø 10
TP 6345	TP Steel Frame Anchor	M06 x 152 ø 10
TP 6346	TP Steel Frame Anchor	M06 x 182 ø 10

** (Inner Diameter) x (Shield Length) ø (Drill diameter) - mm*

Application

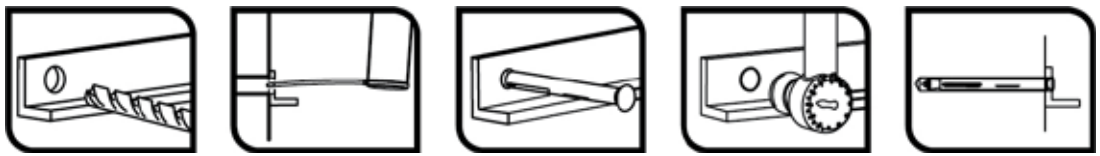
- Used for fixing window frames, door frames, squared timbers

Anchor Material

Name	Size	Component	Material
TP FAS	M6	Screw	Metal (Yellow zinc plated coating)
		Shield	Metal (Zinc plated coating)

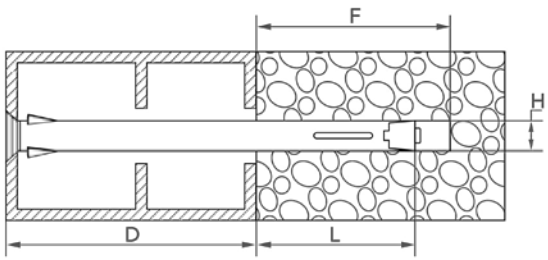
Installation Procedure

- Drill to the diameter and depth values indicated on the data chart. Do not drill in hammer mode on hollow base materials, to avoid inner damages to the base material. Reduce the speed when the drill bit is about to get to the hollow core of the base material
- Blow the hole clean of powder and drilling leftovers
- Put the material to be fixed in place. Insert the screw-plug set into the hole through the material to be fixed up to the plug's collar
- Screw the bolt until the plug has expanded. Be careful not to exceed the torque, to avoid damages to the plug or the base material



Installation Parameters

Item Number	Size	Bolt Length	Drill Diameter H	Minimum drilling depth F	Effective anchorage depth L ≥	Maximum fixture thickness D	Torque
		mm	mm	mm	mm	mm	Nm
TP 6341	M06 x 72 ø 10	85	10	60	40	40	4
TP 6342	M06 x 92 ø 10	105				60	
TP 6343	M06 x 112 ø 10	125				80	
TP 6344	M06 x 132 ø 10	145				100	
TP 6345	M06 x 152 ø 10	165				120	
TP 6346	M06 x 182 ø 10	195				150	



Recommended Load

Maximum Recommended Load in Concrete (Nrecom)

Item Number	Size	Tension	Shear
		kg	kg
TP 6341	M06 x 72 ø 10	170	24
TP 6342	M06 x 92 ø 10		
TP 6343	M06 x 112 ø 10		
TP 6344	M06 x 132 ø 10		
TP 6345	M06 x 152 ø 10		
TP 6346	M06 x 182 ø 10		

TP HOLLOW WALL ANCHORS

TP HAB & TP HA

Product Description

- Anchor for hollow elements as airbrick, dry wall, plaster wall, etc.
- Maximum load in thin walls due to its expansion design.
- Easy, fast and controlled installation. Requires a special tool.
- Previous installation or thought out the material to be fixed.
- Available special pliers to use in difficult accessibility places.
- After Installation screw can be replaced with another same metric size screw.

TP HAB: TP Hollow Wall Anchor with Screw (Zinc Plated)

Item Number	Description	Size*
TP 6694	TP Hollow Wall Anchor with Screw (Zinc Plated)	M04 x 21
TP 6695	TP Hollow Wall Anchor with Screw (Zinc Plated)	M04 x 32
TP 6300	TP Hollow Wall Anchor with Screw (Zinc Plated)	M04 x 38
TP 6696	TP Hollow Wall Anchor with Screw (Zinc Plated)	M04 x 46
TP 6697	TP Hollow Wall Anchor with Screw (Zinc Plated)	M04 x 59
TP 6698	TP Hollow Wall Anchor with Screw (Zinc Plated)	M05 x 37
TP 6699	TP Hollow Wall Anchor with Screw (Zinc Plated)	M05 x 52
TP 6700	TP Hollow Wall Anchor with Screw (Zinc Plated)	M05 x 65
TP 6701	TP Hollow Wall Anchor with Screw (Zinc Plated)	M05 x 80
TP 6308	TP Hollow Wall Anchor with Screw (Zinc Plated)	M06 x 37
TP 6703	TP Hollow Wall Anchor with Screw (Zinc Plated)	M06 x 52
TP 6704	TP Hollow Wall Anchor with Screw (Zinc Plated)	M06 x 65
TP 6705	TP Hollow Wall Anchor with Screw (Zinc Plated)	M06 x 80

*(Diameter) x (Length) - mm

TP HA : TP Hollow Wall Anchor Without Screw (Zinc Plated)

Item Number	Description	Size*
TP 6706	TP Hollow Wall Anchor Without Screw (Zinc Plated)	M04 x 21
TP 6707	TP Hollow Wall Anchor Without Screw (Zinc Plated)	M04 x 32
TP 6313	TP Hollow Wall Anchor Without Screw (Zinc Plated)	M04 x 38
TP 6708	TP Hollow Wall Anchor Without Screw (Zinc Plated)	M04 x 46
TP 6709	TP Hollow Wall Anchor Without Screw (Zinc Plated)	M04 x 59
TP 6710	TP Hollow Wall Anchor Without Screw (Zinc Plated)	M05 x 37
TP 6711	TP Hollow Wall Anchor Without Screw (Zinc Plated)	M05 x 52
TP 6712	TP Hollow Wall Anchor Without Screw (Zinc Plated)	M05 x 65
TP 6713	TP Hollow Wall Anchor Without Screw (Zinc Plated)	M05 x 80
TP 6714	TP Hollow Wall Anchor Without Screw (Zinc Plated)	M06 x 37
TP 6715	TP Hollow Wall Anchor Without Screw (Zinc Plated)	M06 x 52
TP 6716	TP Hollow Wall Anchor Without Screw (Zinc Plated)	M06 x 65
TP 6717	TP Hollow Wall Anchor Without Screw (Zinc Plated)	M06 x 80
TP 6718	TP Hollow Wall Anchor Without Screw (Zinc Plated)	M08 x 65

*(Diameter) x (Length) - mm

Application

- Fixing air conditioning systems, television devices, frames, furniture, etc.

Anchor Material

No.	Name	Size	Component	Material
1	TP HAB	M4 to M6	Bolt Sleeve	Zinc plated steel ≥ 5 µm Zinc plated steel ≥ 5 µm
2	TP HA	M4 to M8	Sleeve	Zinc plated steel ≥ 5 µm

Accessories

Setting tool used for Hollow wall anchor (TP STG & TP STP)

Item Number	Description	Used for Sizes
TP 6326	TP Gun for Hollow Wall Anchor (TP STG)	M4, M5, M6, M8
TP 6327	TP Pliers for Hollow Wall Anchor (TP STP)	M4, M5, M6

TP STG

TP STP

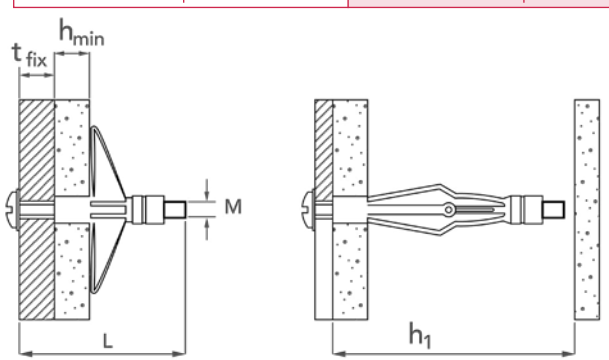
Installation Procedure

- Drill base material to the specified diameter. Do not use hammer drill option
- Insert the bolt with the hand until it is fully attached to the base material. Hammer can be used if necessary
- Place the bolt into the installation gun. Push the trigger until the anchor is fully expanded
- Remove the gun and unthread the bolt
- Place the material to be fixed. Introduce the bolt and fasten it. In case of difficult access materials special installation gun (TP STP) is recommended instead of normal gun (TP STG)

Installation Parameters

Base material thickness ranges are specified, depending on the value of this field, the maximum fixture thickness may vary.

Anchor type		Bolt metric M	Drill Diameter d_0	Bolt length L	Base Material Thickness h_{min}	Maximum fixture thickness t_{fix}
		mm	mm	mm	mm	mm
TP HAB421	TP HA421	M4	8	30	1 - 5	17 - h_{min}
TP HAB432	TP HA432			41	3 - 10	22 - h_{min}
TP HAB438	TP HA438			47	9 - 16	30 - h_{min}
TP HAB446	TP HA446			53	15 - 22	33 - h_{min}
TP HAB459	TP HA459			67	31 - 36	52 - h_{min}
TP HAB537	TP HA537	M5	10	46	5 - 14	26 - h_{min}
TP HAB552	TP HA552			59	6 - 18	42 - h_{min}
TP HAB565	TP HA565			72	16 - 33	55 - h_{min}
TP HAB580	TP HA580			89	33 - 46	61 - h_{min}
TP HAB637	TP HA637	M6	12	46	5 - 13	25 - h_{min}
TP HAB652	TP HA652			59	6 - 17	38 - h_{min}
TP HAB665	TP HA665			72	14 - 32	49 - h_{min}
TP HAB680	TP HA680			89	34 - 46	78 - h_{min}
-	TP HA865	M8	14	73	17 - 33	47 - h_{min}



Recommended Load

		Plasterboard panels						Plaster					
		e = 10mm		e = 12.5mm		e = 2 x 12.5mm		e = 10mm		e = 12.5mm		e = 2 x 12.5mm	
Anchor type		N_{rec}	V_{rec}	N_{rec}	V_{rec}	N_{rec}	V_{rec}	N_{rec}	V_{rec}	N_{rec}	V_{rec}	N_{rec}	V_{rec}
TP HAB421	TP HA421	0.20	0.50	0.20	0.50	-	-	0.20	0.50	0.30	0.60	-	-
TP HAB432	TP HA432	0.20	0.50	0.20	0.50	-	-	0.20	0.50	0.30	0.60	-	-
TP HAB438	TP HA438	0.20	0.50	0.20	0.50	-	-	0.20	0.50	0.30	0.60	-	-
TP HAB446	TP HA446	0.20	0.50	0.20	0.50	-	-	0.20	0.50	0.30	0.60	-	-
TP HAB459	TP HA459	0.20	0.50	0.20	0.50	0.30	0.90	0.20	0.50	0.30	0.60	0.50	0.80
TP HAB537	TP HA537	0.20	0.50	-	-	-	-	0.25	0.50	-	-	-	-
TP HAB552	TP HA552	0.20	0.50	0.20	0.50	-	-	0.30	0.60	0.50	1.00	-	-
TP HAB565	TP HA565	0.20	0.50	0.20	0.50	0.40	1.00	0.30	0.50	0.50	1.00	0.90	1.10
TP HAB580	TP HA580	0.20	0.50	0.20	0.50	0.40	1.00	0.30	0.50	0.50	1.00	0.90	1.10
TP HAB637	TP HA637	0.15	0.40	-	-	-	-	0.20	0.50	-	-	-	-
TP HAB652	TP HA652	0.20	0.50	0.20	0.50	-	-	0.25	0.80	0.30	1.00	-	-
TP HAB665	TP HA665	0.20	0.50	0.20	0.50	0.30	0.90	0.25	0.80	0.30	1.00	0.80	1.80
TP HAB680	TP HA680	0.20	0.75	0.20	0.75	0.30	0.90	0.25	0.80	0.30	1.00	0.80	1.80
-	TP HA865	0.20	0.50	0.20	0.50	0.40	1.00	0.40	0.90	0.80	1.20	0.90	1.70

Tension and Shear values must be considered separately.

NYLON FIXING

TP NYLON PLUGS

TP HF - Hammerfix Assembled Anchor Saw-tooth Thread Polyamide 6.6

- Countersunk Head

Item Number	Description	Size*
TP 6328	TP Hammerfix Assembled Anchor. Countersunk Head	M05 x 025
TP 6329	TP Hammerfix Assembled Anchor. Countersunk Head	M05 x 030
TP 6330	TP Hammerfix Assembled Anchor. Countersunk Head	M05 x 035
TP 6331	TP Hammerfix Assembled Anchor. Countersunk Head	M05 x 050
TP 6332	TP Hammerfix Assembled Anchor. Countersunk Head	M06 x 035
TP 6333	TP Hammerfix Assembled Anchor. Countersunk Head	M06 x 040
TP 6334	TP Hammerfix Assembled Anchor. Countersunk Head	M06 x 050
TP 6335	TP Hammerfix Assembled Anchor. Countersunk Head	M06 x 060
TP 6336	TP Hammerfix Assembled Anchor. Countersunk Head	M06 x 070
TP 6337	TP Hammerfix Assembled Anchor. Countersunk Head	M08 x 060
TP 6338	TP Hammerfix Assembled Anchor. Countersunk Head	M08 x 080
TP 6339	TP Hammerfix Assembled Anchor. Countersunk Head	M08 x 100
TP 6340	TP Hammerfix Assembled Anchor. Countersunk Head	M08 x 120
TP 6924	TP Hammerfix Assembled Anchor. Countersunk Head	M08 x 140

**(Diameter) x (Length) - mm*

TP HFC - Hammerfix Assembled Anchor Saw-tooth Thread Polyamide 6.6

Cylindrical Head

Item Number	Description	Size*
TP 6925	TP Hammerfix Assembled Anchor. Cylindrical Head	M05 x 025
TP 6926	TP Hammerfix Assembled Anchor. Cylindrical Head	M05 x 030
TP 6927	TP Hammerfix Assembled Anchor. Cylindrical Head	M05 x 035
TP 6928	TP Hammerfix Assembled Anchor. Cylindrical Head	M05 x 050
TP 6929	TP Hammerfix Assembled Anchor. Cylindrical Head	M06 x 035
TP 6930	TP Hammerfix Assembled Anchor. Cylindrical Head	M06 x 040
TP 6931	TP Hammerfix Assembled Anchor. Cylindrical Head	M06 x 050
TP 6932	TP Hammerfix Assembled Anchor. Cylindrical Head	M06 x 060
TP 6933	TP Hammerfix Assembled Anchor. Cylindrical Head	M06 x 070
TP 6934	TP Hammerfix Assembled Anchor. Cylindrical Head	M08 x 060
TP 6935	TP Hammerfix Assembled Anchor. Cylindrical Head	M08 x 080
TP 6936	TP Hammerfix Assembled Anchor. Cylindrical Head	M08 x 100
TP 6937	TP Hammerfix Assembled Anchor. Cylindrical Head	M08 x 120
TP 6938	TP Hammerfix Assembled Anchor. Cylindrical Head	M08 x 140

**(Diameter) x (Length) - mm*

TP HFA2 - Hammerfix Assembled Anchor Saw-tooth Thread Polyamide 6.6

- Stainless Steel A2-Countersunk Head

Item Number	Description	Size*
TP 7000	TP Hammerfix Assembled Anchor. Counter. Head SS-A2	M05 x 030
TP 7001	TP Hammerfix Assembled Anchor. Counter. Head SS-A2	M06 x 040
TP 7002	TP Hammerfix Assembled Anchor. Counter. Head SS-A2	M06 x 060
TP 7003	TP Hammerfix Assembled Anchor. Counter. Head SS-A2	M08 x 060
TP 7004	TP Hammerfix Assembled Anchor. Counter. Head SS-A2	M08 x 080
TP 7005	TP Hammerfix Assembled Anchor. Counter. Head SS-A2	M08 x 100

*(Diameter) x (Length) - mm

TP FUN6A - Nylon Plug Polyamide 6.6 for Hollow Bricks

- Countersunk Head Wood Screw

Item Number	Description	Size*
TP 6939	TP Nyl.frame Fix. 6 Wings & Countersunk H. Wood Screw	M08 x 080
TP 6940	TP Nyl.frame Fix. 6 Wings & Countersunk H. Wood Screw	M08 x 100
TP 6941	TP Nyl.frame Fix. 6 Wings & Countersunk H. Wood Screw	M08 x 120
TP 6942	TP Nyl.frame Fix. 6 Wings & Countersunk H. Wood Screw	M08 x 140
TP 6943	TP Nyl.frame Fix. 6 Wings & Countersunk H. Wood Screw	M10 x 100
TP 6944	TP Nyl.frame Fix. 6 Wings & Countersunk H. Wood Screw	M10 x 120
TP 6945	TP Nyl.frame Fix. 6 Wings & Countersunk H. Wood Screw	M10 x 140
TP 6946	TP Nyl.frame Fix. 6 Wings & Countersunk H. Wood Screw	M10 x 160
TP 6947	TP Nyl.frame Fix. 6 Wings & Countersunk H. Wood Screw	M10 x 200

*(Diameter) x (Length) - mm

TP FUN - Nylon Plug
Polyamide 6.6 for Concrete

- Countersunk Head Wood Screw

Item Number	Description	Size*
TP 7006	TP Nyl.frame Fix. 2 Wings & Countersunk H. Wood Screw	M06 x 060
TP 7007	TP Nyl.frame Fix. 2 Wings & Countersunk H. Wood Screw	M08 x 060
TP 7008	TP Nyl.frame Fix. 2 Wings & Countersunk H. Wood Screw	M08 x 080
TP 7009	TP Nyl.frame Fix. 2 Wings & Countersunk H. Wood Screw	M08 x 100
TP 7010	TP Nyl.frame Fix. 2 Wings & Countersunk H. Wood Screw	M08 x 120
TP 7011	TP Nyl.frame Fix. 2 Wings & Countersunk H. Wood Screw	M10 x 065
TP 7012	TP Nyl.frame Fix. 2 Wings & Countersunk H. Wood Screw	M10 x 080
TP 7013	TP Nyl.frame Fix. 2 Wings & Countersunk H. Wood Screw	M10 x 100
TP 7014	TP Nyl.frame Fix. 2 Wings & Countersunk H. Wood Screw	M10 x 115
TP 7015	TP Nyl.frame Fix. 2 Wings & Countersunk H. Wood Screw	M10 x 135
TP 7016	TP Nyl.frame Fix. 2 Wings & Countersunk H. Wood Screw	M10 x 160

**(Diameter) x (Length) - mm*

TP NYLON FRAME ANCHORS

TP NFA (Zinc Plated Screw)

Hammerfix Anchor Nylon Plug with Countersunk Head Screw

Item Number	Description	Size*
TP 6626	TP Hammerfix Anchor Nylon Plug with Countersunk Head Screw.	M8x80
TP 6627	TP Hammerfix Anchor Nylon Plug with Countersunk Head Screw.	M8x100
TP 6628	TP Hammerfix Anchor Nylon Plug with Countersunk Head Screw.	M8x120
TP 6629	TP Hammerfix Anchor Nylon Plug with Countersunk Head Screw.	M10x80
TP 6630	TP Hammerfix Anchor Nylon Plug with Countersunk Head Screw.	M10x100
TP 6331	TP Hammerfix Anchor Nylon Plug with Countersunk Head Screw.	M10x120
TP 6632	TP Hammerfix Anchor Nylon Plug with Countersunk Head Screw.	M10x140
TP 6633	TP Hammerfix Anchor Nylon Plug with Countersunk Head Screw.	M10x160
TP 6634	TP Hammerfix Anchor Nylon Plug with Countersunk Head Screw.	M10x200
TP 6635	TP Hammerfix Anchor Nylon Plug with Countersunk Head Screw.	M10x230

**(Diameter) x (Length) - mm*

TP NFA-A4 (Stainless Steel A4 Screw)

Item Number	Description	Size*
TP 6636	TP Hammerfix Anchor Nylon Plug with Stainless Steel A4. Countersunk Head	M08x80
TP 6637	TP Hammerfix Anchor Nylon Plug with Stainless Steel A4. Countersunk Head	M08x100
TP 6638	TP Hammerfix Anchor Nylon Plug with Stainless Steel A4. Countersunk Head	M08x120
TP 6639	TP Hammerfix Anchor Nylon Plug with Stainless Steel A4. Countersunk Head	M10x80
TP 6640	TP Hammerfix Anchor Nylon Plug with Stainless Steel A4. Countersunk Head	M10x100
TP 6641	TP Hammerfix Anchor Nylon Plug with Stainless Steel A4. Countersunk Head	M10x120
TP 6642	TP Hammerfix Anchor Nylon Plug with Stainless Steel A4. Countersunk Head	M10x140
TP 6643	TP Hammerfix Anchor Nylon Plug with Stainless Steel A4. Countersunk Head	M10x160

**(Diameter) x (Length) - mm*

FIRESTOP


TEAM PRO
TP
CLASSIFIED
UL

TP FS-GP GENERAL PURPOSE SEALANT

Product Description

TP FS-GP is a one component, general purpose fire rated sealant and smoke seal for construction joints and through- penetrations.
TP FS-GP General Purpose Sealant is a water based, non-sag caulking grade sealant that is easy to apply as well as to retrofit. It cures to an elastomeric seal that is suitable where dynamic movement is expected. In the event of a fire, TP FS-GP will prevent the spread of flames, smoke, hot gases and water through joint openings and through- penetrations. No dilution or mixing is required for use.
No special skills are necessary for installation.
TP FS-GP is applied with a conventional caulking gun, bulk loading gun or can be troweled from the pail. For large applications, it can be pumped directly from the pail.
TP FS-GP systems are rated for 1 and 2 hours in accordance with ASTM E814 (UL 1479) and ASTM E1966 (UL 2079) test standards.
TP FS-GP is protected in a wet stage as well as in a dry stage against mold growth with a combination of biocides.

Item Number	Description	Size
TP 1506	TP FS-GP General Purpose Sealant	10.3oz caulk tube (304.6ml)
TP 1505	TP FS-GP General Purpose Sealant	30oz caulk tube (887.2ml)
TP 1507	TP FS-GP General Purpose Sealant	5 gallon pails (18.9L) - red

Use TP FS-GP for various applications:

- Top of the Wall Construction Joints
- Deflection Track Wall Systems
- Up to 2" (51 mm) PVC/CPVC & ABS (Closed)
- Steel, Copper, Cast Iron and EMT Pipe.
- Telephone, Communication and Power Cables

For a complete list of product applications or for additional technical information, call TEAM PRO for the latest information.

TP FS-GP Features:

- Water Based
- Excellent Freeze-Thaw
- Flexible Set
- Paintable
- VOC Compliant
- Safe and Easy to Use
- 3 Years Shelf Life
- Intumescent

Material Properties

Asbestos Fillers	None
Solvents	None
Hazardous Ingredients	None
Application	Gun or Trowel
Color	Red
Cure Time	3 to 4 weeks (at 77°F/ 25°C)
Density	~12.5 lbs. / gal.
Elastomeric	Yes
Freeze-Thaw	Excellent
Skin over Time	30 min. (at 77°F/25°C)
PH Value	7 to 8

Volume Coverage:

For 10.3 oz. tube (304 ml)	18 cu. in.
For 5 gallon (18.9 liter)	1155 cu. in.
VOC	Negligible

ASTM E 90-99, 723 Tunnel Test

Flame Spread	10
Smoke Index	0

Sound Transmission Class STC Rating **65***

**Tested in a UL 411 wall assembly/section to ASTM E90.*

Applications

TP FS-GP can be used in interior applications as a general purpose fire rated sealant and smoke seal for construction joints on both vertical and horizontal surfaces.

TP FS-GP is also an excellent fire rated acoustical sealant and can be used in areas under constant vibration or movement.

TP FS-GP can also be used on various penetrations such as EMT, telephone & power cables in concrete floors and walls, gypsum walls as well as wood floors.

Use TP FS-GP to prevent the spread of fire and smoke through joints in fire rated gypsum wallboard partitions, concrete block or concrete walls and/or concrete or corrugated steel deck floor/ceiling assemblies.

Installation Data

Install TP FS-GP using standard caulking techniques or trowel from pails. TP FS-GP may also be pumped from the pails. When damming materials are needed, use only materials approved for the specific application.

Typical Gypsum Wallboard Installation

Step 1 - cut opening in wall.

Step 2 - clean penetration opening and surfaces from loose debris, dirt, oil and wax.

Step 3 - if required, install sleeve or wire mesh and backing material.

Step 4 - gun the sealant as required to the specified depth. Trowel surface flush with wall.

(Application designs vary, please contact TEAM PRO for exact details.) Consult UL Directory for complete instructions and system listings.

Testing Data

For specific test criteria, refer to UL's Fire Resistance Directory or call TEAM PRO.

TP FS-GP was tested at positive pressure with a minimum 0.01 (2.5 Pa) inches water and in accordance with ASTM E814 (UL 1479) and ASTM E1966 (UL 2079).

Storage & Handling

TP FS-GP should be stored between 35°F (2°C) and 120°F (49°C) to obtain a 3 years shelf life.
NOTE: Do not dilute, no mixing is required. Best if protected from freezing.
If freezing occurs, thaw completely before using.
Keep products stored under protective cover in original containers.

Limitations

TP FS-GP is not designed to be used in areas under continuous immersion or in areas which would be continuously wet.

TP FS-GP should not be used against hot uninsulated surfaces above 300° F (149° C).

Cautions

For chemical emergency, spill, leak, fire, exposure or accident, get immediate medical attention.

Precautions: Do not take internally. May be harmful if swallowed. May cause eye and skin irritation if prolonged or repeated contact occurs. Wash after handling.

FIRST AID: For any overexposure, get immediate medical attention after first aid is given. **Eyes-** Flush 15 minutes with clean water. **Skin-** Wash with soap and water. **Inhalation-** Remove to fresh air. **Ingestion-** Only if conscious, give large amounts of water and INDUCE VOMITING. **FIRE AND SPILLS:** Use water fog, CO_2, foam, or dry chemicals. Wipe up spills to prevent footing hazard. Clean up with scrapers and water. **STORAGE AND HANDLING:** Store away from heat sources. Keep container closed. Do not reuse empty container. **KEEP OUT OF REACH OF CHILDREN.**

For additional information, refer to Safety Data Sheet.
For additional technical service: www.team-pro.com or info@team-pro.com

Limited Warranty

TEAM PRO makes the Limited Express Warranty that when the instructions for storage and handling of our products are followed we warrant our products to be free from defects. THIS LIMITED EXPRESS WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER EXPRESS OR IMPLIED WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND OF ANY OTHER OBLIGATION ON THE PART OF TEAM PRO. The sole remedy for breach of the Limited Express Warranty shall be the refund of the purchase price. All other liability is negated and disclaimed, and TEAM PRO shall not be liable for incidental or consequential damages.
Suggestions and recommendations covering the use of our products are based on our laboratory findings. However, as we have no control as to the methods and conditions of application, we only assume responsibility for the uniformity of our products within manufacturing tolerances.

TP FS-IS INTUMESCENT SEALANT

Product Description

TP FS-IS is a one component, general purpose fire rated sealant and smoke seal for construction joints and through-penetrations. TP FS-IS is a water based, extremely intumescent, non-sag caulking grade sealant that is easy to apply as well as to retrofit. It cures to an elastomeric seal that is suitable where dynamic movement is expected.

In the event of a fire, TP FS-IS will prevent the spread of flames, smoke, hot gases and water through joint openings and through penetrations. No dilution or mixing is required for use. No special skills are necessary for installation.

TP FS-IS is applied with a conventional caulking gun, bulk loading gun or can be troweled from the pail. For large applications, it can be pumped directly from the pail. TP FS-IS systems are rated for 1, 2, 3 and 4 hours in accordance with the ASTM E814 (UL 1479) and ASTM E1966 (UL 2079) test standards.

TP FS-IS is protected in a wet stage as well as in a dry stage against mold growth with a combination of biocides.

Item Number	Description	Size
TP 1533	TP FS-IS Instumescent Sealant	10.3oz caulk tube (304.6ml)
TP 1504	TP FS-IS Instumescent Sealant	30oz caulk tube (887.2ml)
TP 1502	TP FS-IS Instumescent Sealant	5 gallon pails (18.9L)

Use TP FS-IS intumescent sealant for various applications:

- Top of the Wall Construction Joints
- Deflection Track Wall Systems
- Up to 2" (51 mm) PVC\CPVC (Open)
- Up to 3" (76 mm) PVC\CPVC & ABS (Closed)
- Cross linked Polyethylene (PEX) tubing
- Steel, Copper, Cast Iron and EMT Pipe
- Flexible Conduit
- Fiberglass Insulated Pipe
- Armaflex Insulated Pipe
- Telephone, Communication and Power Cables
- HVAC Ductwork.

For a complete list of product applications or for additional technical information, call TEAM PRO for the latest updated information

TP FS-IS Features:

- Water Based
- Excellent Freeze-Thaw
- Flexible Set
- Highly Intumescent
- Paintable
- VOC Compliant
- Safe and Easy to Use
- 3 Years Shelf Life

Material Properties

Asbestos Fillers	None
Solvents	None
Hazardous Ingredients	None
Application	Gun or Trowel
Activation of Intumescence:	
■ Expansion Begins	375°F (190°C)
■ Expansion Greatest	575°F (302°C) to 1100°F (593°C)
Color	Red
Cure Time	3 to 4 weeks (at 77°F/ 25°C)
Density	~11 lbs/gal (1.3 kg/L)
Elastomeric	Yes
Freeze-Thaw	Excellent
Skin over Time	30 min. (at 77°F/25°C)
PH Value	6.5 to 7

Volume Coverage:

■ For 10.3 oz. tube (304 ml)	18 cu. in. (295 cm^3)
■ For 5 gallon (18.9 liter)	1155 cu. in. (5000 cu. cm/L)
VOC	Negligible

ASTM E 90-99, 723 Tunnel Test

Flame Spread	5
Smoke Index	10

Sound Transmission Class STC Rating 62*

**Tested in a UL 411 wall assembly/section to ASTM E90.*

Applications

TP FS-IS can be used in interior applications as a general purpose fire rated sealant and smoke seal for construction joints on both vertical and horizontal surfaces .
TP FS-IS is also an excellent fire rated acoustical sealant and can be used in areas under constant vibration or movement.
TP FS-IS can also be used on various penetrations such as EMT, telephone & power cables, insulated pipes, etc. in concrete floors and walls , gypsum walls as well as wood floors.
Use TP FS-IS to prevent the spread of fire and smoke through joints in fire rated gypsum wallboard partitions, concrete block or concrete walls and/or concrete or corrugated steel deck floor/ceiling assemblies.

Installation Data

Install TP FS-IS using standard caulking techniques or trowel from pails. TP FS-IS may also be pumped from the pails.
When damming materials are needed, use only materials approved for the specific application.

Typical Top of Wall Installation

Step 1 - Cut and fit the gypsum wallboard to the contour of the steel decking leaving a maximum 3/4" (19 mm) relief gap.
Step 2 - Pack the flute openings and relief gap with required amount of fiberglass insulation and recess to required depth.
Step 3 - Gun, trowel or pump the sealant as required to the specified depth. Properly tool sealant surface flush with the wall.
Consult UL Directory for complete instructions and system listings.

Testing Data

For specific test criteria, refer to UL's Fire Resistance Directory or call TEAM PRO.
TP FS-IS was tested at positive pressure with a minimum 0.01 (2.5 Pa) inches water and in accordance with ASTM E814 (UL 1479) and ASTM E1966 (UL 2079).
Complies to Required Environmental Exposure Testing of Accelerated Aging and High Humidity as per UL 1479 Fire Test of Through-Penetration Firestops.

Storage & Handling

TP FS-IS should be stored between 35°F (2°C) and 120° F (49° C). To obtain a 3 years shelf life.
NOTE: Do not dilute, no mixing is required. Best if protected from freezing. If freezing occurs, thaw completely before using. Keep products stored under protective cover in original containers.

Limitations

TP FS-IS is not designed to be used in areas under continuous immersion or in areas which would be continuously wet.
TP FS-IS should not be used against hot uninsulated surfaces above 300° F (149° C).

Cautions

For chemical emergency, spill, leak, fire, exposure or accident, get immediate medical attention.

Precautions: Do not take internally. May be harmful if swallowed. May cause eye and skin irritation if prolonged or repeated contact occurs. Wash after handling.

FIRST AID: For any overexposure, get immediate medical attention after first aid is given. **Eyes-** Flush 15 minutes with clean water. **Skin-** Wash with soap and water. **Inhalation-** Remove to fresh air. **Ingestion-** Only if conscious, give large amounts of water and INDUCE VOMITING. **FIRE AND SPILLS:** Use water fog, CO_2, foam, or dry chemicals. Wipe up spills to prevent footing hazard. Clean up with scrapers and water. **STORAGE AND HANDLING:** Store away from heat sources. Keep container closed. Do not reuse empty container. **KEEP OUT OF REACH OF CHILDREN.**

For additional information, refer to Safety Data Sheet.
For additional technical service: www.team-pro.com or info@team-pro.com

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TP FS-MC Caulk Grade Sealant & TP FS-MS Mastic Spray Sealant

Product Description

TP FS-MC and TP FS-MS are a single component, general purpose fire rated sealant for construction joints such as top of the wall, curtain wall perimeter, expansion, control, etc. and for general construction gaps and voids. They are a water based sealants.
TP FS-MS mastic spray is designed for spray applications and provides a fast, economical means of installation on long joint runs.
TP FS-MC caulk grade is a non-sag sealant that is easy to apply from a caulk gun or troweled. It cures to an elastomeric membrane seal that is suitable where dynamic movement is expected.
In the event of a fire, TP FS-MC & TP FS-MS will prevent the spread of flames, smoke, hot gases, and water through the joint openings. No dilution or mixing is required for use.
TP FS-MC & TP FS-MS can be caulked from a tube, brushed or troweled from the pail or applied with a spray pump.
TP FS-MC & TP FS-MS systems are rated for up to 4 hours conditions in accordance with ASTM E1966/UL 2079 (Tests for Fire Resistance of Building Joint Systems) test standards. TP FS-MC & TP FS-MS have been cycled 500 times, meeting the new ASTM E1399 standard. Also tested in accordance with ASTM E 814 (UL 1479) for systems up to 3 hours.
TP FS-MC & TP FS-MS are protected in a wet stage as well as in a dry stage against mold growth with a combination of biocides.

Item Number	Description	Size
TP 1503	TP FS-MC Caulk Grade Sealant	30oz caulk tube (304.6ml) - white
TP 1532	TP FS-MC Caulk Grade Sealant	30oz caulk tube (304.6ml) - red
TP 1500	TP FS-MC Caulk Grade Sealant	5 gallon pails (18.9L) - white - caulk
TP 1530	TP FS-MC Caulk Grade Sealant	5 gallon pails (18.9L) - red - caulk
TP 1501	TP FS-MS Mastic Spray Sealant	5 gallon pails (18.9L) - white - spray
TP 1531	TP FS-MS Mastic Spray Sealant	5 gallon pails (18.9L) - red - spray

TP FS-MC TP FS-MS

Use TP FS-MC & MS for various applications:

- Curtain Wall Joints
- HVAC Ductwork
- Top of the Wall Construction Joints
- Deflection Track Wall Systems

For a complete list of product applications or for additional technical information, call TEAM PRO for the latest information.

TP FS-MC & TP FS-MS Features:

- Sprayable, Brushable, Trowelable or Caulkable
- Freeze-thaw
- Water based
- Flexible - Elastomeric
- Paintable
- VOC Compliant
- Excellent Smoke Seal
- 3 Years Shelf Life

Material Properties

Asbestos Fillers	None
Solvents	None
Hazardous Ingredients	None
Application	Spray, Caulk, Brush or Trowel
Color	Red or White
Cure Time	5 to 7 days (1/8” at 77°F/25°C)
Density	~10.5 lbs./gal.
Flexible	Yes
Skin over Time	30-45 min. (at 77°F/25°C)
PH Value	7 to 8

Volume Coverage (at 1/8" wet depth):

Per Square Foot	18 cu. in.
Per 20.2 oz.	36 cu. in.
Per 30 oz.	54 cu. in.
Per Quart	58 cu. in.
Per 5 gallon pail	1155 cu. in.
VOC	Negligible

ASTM E 90-99, UL 723 Tunnel Test

Flame Spread	5
Smoke Index	5

Sound Transmission Class STC Rating **65***

**Tested in a UL 411 wall assembly/section to ASTM E90.*

Applications

TP FS-MC & MS can be used as a general purpose fire rated sealant and smoke seal for construction joints on both vertical and horizontal surfaces. TP FS-MC & MS are also an excellent fire rated acoustical sealants and can be used in areas under constant vibration.

Installation Data

Tightly pack with the appropriate backing material as listed in the selected UL System design. There should be no loose insulation, voids or gaps present. Apply the required coating thickness to completely cover backing material.
Consult UL Directory for complete instructions and system listings.
For TP FS-MS spray application, use recommended spray equipment.
When system clean-up is needed, follow manufacturer's instructions for specific equipment used.
NOTE: spray equipment can be dangerous! use only properly trained personnel.
Follow all safety and operation instructions and procedures.

Testing Data

TP FS-MC & TP FS-MS have been listed by UL.
For specific test criteria, refer to the UL Fire Resistance Directory or call TEAM PRO.
TP FS-MC & TP FS-MS were tested at positive pressure with a minimum 0.01 inches (2.5 Pa) water and in accordance with UL 2079 test standards.

Storage & Handling

TP FS-MC & TP FS-MS should be stored in unopened container between 35°F (2°C) and 120°F (49°C) to obtain a 3 years shelf life.
NOTE: Do not dilute; no mixing is required. Best if protected from freezing. If freezing occurs, thaw completely before use. Keep products stored under protective cover in original containers.

Limitations

TP FS-MC & TP FS-MS are not designed to be used in areas under continuous immersion or in areas which would be continuously wet.
TP FS-MC & TP FS-MS should not be used on hot uninsulated surfaces above 200°F (93°C).

Cautions

For chemical emergency, spill, leak, fire, exposure or accident, get immediate medical attention.

Precautions: Do not take internally. May be harmful if swallowed. May cause eye and skin irritation. Wear gloves and safety glasses. Wash after handling. **FIRST AID:** For any overexposure or if skin irritation develops get immediate medical attention.
Eyes - Flush 15 minutes with clean water. **Skin** - Wash with soap and water. **Ingestion** - Call physician immediately **SPILLS:** Clean up immediately with scrapers and water. **STORAGE AND HANDLING:** Keep container upright and tightly closed. Do not reuse empty container. **KEEP OUT OF REACH OF CHILDREN.**

TP FS-MC & TP FS-MS COVERAGE RATE:

Note: Coverage rates as given are mathematical calculations. Allow for application losses, opening size variations and applied thickness variations. (Verify all calculations)
Based on 3" fluted metal deck with 3/4" relief joint.

For additional information, refer to Safety Data Sheet.
For additional technical service: www.team-pro.com or info@team-pro.com

Opening Width (inches)	*Coverage Rate in Lineal Feet Per Gallon at Application Thickness of: 1/8 inch
½”	102
¾”	88
1”	77
1 ½”	61
2”	51
2 ½”	44
3”	38
3 ½”	34
4”	30
5”	25
6”	22

**Calculation includes 1/2" overlap along both edges of opening*

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TP FS WRAP STRIP

Product Description

A strip of highly intumescent firestop material used primarily for plastic and insulated pipe applications. When exposed to heat, this product expands and forms a hard char to seal off the penetration preventing the passage of flames and hot gases.

TP FS Wrap Strip Features:

- Easy to install
- Cost effective
- Versatile, Flexible
- Highly intumescent
- Excellent freeze/thaw characteristics
- Long length means less waste
- Forms a very hard char when burned

Item Number	Description	Size
TP 1513	TP FS Wrap Strip	1” x 1/4” x 12’ (3.66m)
TP 1514	TP FS Wrap Strip	2” x 1/4” x 36’ (11m)

Material Properties

Asbestos Fillers	None
Solvents	None
Hazardous Ingredients	None
Size (Approx.)	1" x 1/4" x 12' (25 mm x 6 mm x 3.66 m) 2" x 1/4" x 12' (50 mm x 6 mm x 11 m)

Activation of Intumescence:

Expansion Begins	375°F (190°C)
Expansion Greatest	575°F (302°C) to 1100°F (593°C)

Color	Black
Freeze-Thaw	Excellent

ASTM E 84, UL 723 Tunnel Test

Flame Spread	5
Smoke Index	5

Applications

TP FS Wrap Strip can firestop difficult penetrations such as plastic pipe, and insulated pipe.

Installation Data

TP FS Wrap Strip is simple to install. Tightly wrap the required number of strips continuously around the penetrant to completely fill the annular space or as required by system design. Push the strips into the opening to the required depth. If a cold smoke seal is required, apply the recommended sealant in the opening over the strips. Consult UL Directory for complete instructions and system listings.

Testing Data

TP FS Wrap Strip is classified by Underwriters Laboratories as a Fill, Void or Cavity Material. For specific test criteria, see UL Fire Resistance Directory. TP FS Wrap Strip was tested at positive pressure for a minimum .01 inches (2.5 Pa) of water in accordance with ASTM E814 (UL 1479) test standards.
Complies to Required Environmental Exposure Testing of Accelerated Aging and High Humidity as per UL 1479 Fire Test of Through-Penetration Firestops.

Storage & Handling

TP FS Wrap Strip should be stored in a cool, dry place. Keep products stored under protective cover, in their original containers. A stock rotation program is recommended.

Limitations

To be used only in the tested configurations or as recommended by TEAM PRO.

Cautions

For chemical emergency, spill, leak, fire, exposure or accident, get immediate medical attention.

Precautions: Do not take internally. May be harmful if swallowed. May cause eye and skin irritation if prolonged or repeated contact occurs. Wash after handling. **FIRST AID:** For any overexposure, get immediate medical attention after first aid is given. Eyes- Flush 15 minutes with clean water. **Skin** - Wash with soap and water. **Ingestion** - Only if conscious, give large amounts of water and INDUCE VOMITING. **FIRE AND SPILLS:** Use water fog, CO_2, foam, or dry chemicals. Wipe up spills to prevent footing hazard. Clean up with scrapers and water. **STORAGE AND HANDLING:** Store away from heat sources.
KEEP OUT OF REACH OF CHILDREN.

For additional information, refer to Safety Data Sheet.
For additional technical service: www.team-pro.com or info@team-pro.com

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TP FS UNIVERSAL COLLAR

Product Description

SUITABLE FOR GYPSUM, CONCRETE, OR WOOD

Item Number	Description	Size
TP 1515	TP FS Universal Collar	1" x 50' roll
TP 1516	TP FS Universal Collar	2" x 50' roll

For additional technical service:
www.team-pro.com or info@team-pro.com

Installation Procedures

For use with 2" (51mm) wide Wrap Strip when a metal collar is required.
Please refer to the appropriate UL Wrap Strip system for proper installation instructions and use requirements.

TP CAULKING GUNS

Product Description

TP Caulking Guns
Cartridge, Foil, and Bulk Loading

Features:
- Industrial grade

Item Number	Description
TP 1525	TP Caulking Gun 10.3oz.
TP 1526	TP Caulking Gun 30oz.
TP 1527	TP Caulking Foil Gun 20.2oz.
TP 1528	TP Caulking Foil Gun tips
TP 1529	TP Bulk Loading Gun 24oz.

TP FS MORTAR

Product Description

TP Firestop Mortar is a specially formulated rapid hardening gypsum/cement compound. The product provides the optimum combination of workability, strength and fire resistance. When mixed with clean water to a suitable consistency, TP Firestop Mortar sets without shrinking and can form a rigid, gas tight, fire resistant seal. It can easily be drilled and resealed if future penetrants are needed. No special tools are required to mix or install the product. TP Firestop Mortar systems are rated for up to 4 hours and has been tested in accordance with ASTM E814 (UL 1479) test standard.

TP Firestop Mortar is protected in a wet stage as well as in a dry stage against mold growth with a combination of biocides.

Use TP Firestop Mortar for various applications:

- Wall or floor applications
- Around metallic pipes (steel, copper, iron, etc.)
- Around electrical power cables
- Around communication cables (telephone, fiber optic, etc.)
- Blank openings
- Concrete or concrete block (CMU) walls
- Concrete floors
- Cable Trays (aluminum or steel)

Item Number	Description	Size
TP 1520	TP FS Mortar	45 lbs.bag

TP Firestop Mortar Features:

- Non-sag Adjustable consistency (pourable or trowelable)
- High yield
- Non-shrinking
- Safe and simple to use
- Workable approximately 45 minutes

Material Properties

Color	Light Red
Approximate expansion on setting	0.1%
Density loose bulk	40.6 pcf (650 kg/m^3)
Density wet cast	84.3 pcf (1350 kg/m^3)
Density oven dried	54.6 pcf (875 kg/m^3)
Crushing strength, wet	700 psi (5 N/mm^2)
Asbestos fillers	None
PH Values	6.5
Adhesion to concrete	Excellent
Adhesion to Steel/Copper	Good
Adhesion to Cables	Good
Freeze-Thaw Resistance	Excellent
Workable Pot Life	Approximately 45 minutes
Sets hard	3 - 4 hours
Fully Cured	28 days
Yield	2:1 mix ratio, 1500 cubic inches per 45 lb bag 3:1 mix ratio, 1350 cubic inches per 45 lb bag

Applications

A fire rated load bearing mortar to economically firestop large openings for through-penetrations in fire rated walls and floors. Can be used with power cables, fiber optic telephone cables. Recommended for use with aluminum or steel cable trays, as well as EMT, copper, steel, or black iron pipe.

Installation Data

Mixing Procedure: Mix with clean water in a suitable container. Slowly add the dry mortar mix to water while stirring by hand, or by power mixer, to ensure a smooth lump free mix.

Recommended Mixing Ratios:
Mortar Mix: Water (by volume) Consistency

- Pourable For Floor Openings 2 1/2: 1
- Stiff for Wall Openings 3: 1

DO NOT USE A MIX RATIO OF LESS THAN 2:1

Note: The wet mix will remain usable for approximately 45-60 minutes depending on batch size, water content and temperature. Once material has been mixed to the desired consistency, DO NOT attempt to alter by adding additional water or mortar THIS WILL CAUSE THE MATERIAL TO HARDEN VERY QUICKLY. Any spillage should be wiped up with a damp cloth before setting occurs.

Thickness/Fire Rating
Refer to tested designs or manufacturer's recommendations.

Health and Safety
Non-toxic and asbestos free. Take normal precautions to avoid inhalation, or ingestion, and to ensure adequate ventilation when mixing. In the event of eye or mouth contact, wash immediately with plenty of clean water. Refer to Safety Data Sheet for additional information.

Contains: Gypsum Plaster and Perlite aggregate.

INSTALLATION INSTRUCTIONS WALL OPENINGS For small holes and gaps, trowel a stiff mix into the opening to the desired depth. For larger holes, use an appropriate damming material to support the mix until it sets.

Floor Openings

When sealing holes in floor slabs, an appropriate damming material must be installed prior to pouring in the mortar mix. Panels of damming materials should be cut to fit tightly around penetration within the opening so as to avoid leakage of the mortar mix during pouring.

Note: Damming materials can be made from various materials, e.g. insulation, hard foam, wood, backer rod, etc. These damming materials can be either combustible or noncombustible. Combustible damming material is usually removed after the mortar mix has set. Non-combustible damming materials can be left in place. However, the specifier or the local authority having jurisdiction may require a specific type of or the removal of a particular damming material. If damming material is to be removed, a suitable bond breaker (e.g. plastic sheeting) should be used between the mortar mix and the damming material.

Testing Data

TP Firestop Mortar has been classified and listed by Underwriters Laboratories and tested at a positive pressure with a minimum .01 inches of water and in accordance with ASTM E814 (UL 1470).

Storage & Handling

Must be stored in dry conditions under protective cover in its original container. Two year shelf life when stored inside, in a conditioned area and in the original unopened containers.

Limitations

TP Firestop Mortar is not designed to be used in areas under continuous immersion or in areas which would be continuously wet. The mortar should not be used in areas which would experience high or severe vibration or movement.

Cautions

For chemical emergency, spill, leak, fire, exposure or accident, get immediate medical attention.

Precautions: Do not take internally. May cause eye, skin, and respiratory tract irritation. Wear gloves and safety glasses. Wash after handling. **FIRST AID:** For any over exposure or if skin irritation develops get immediate medical attention after first aid is given. **EYES:** Flush for 15 minutes with clean water. Seek immediate medical attention. **SKIN:** Wash with soap and water. Do not use solvents to remove from skin. **INHALATION:** Remove to fresh air. **INGESTION:** DO NOT INDUCE VOMITING. **SPILLS:** Clean up immediately with scrapers and water. **STORAGE AND HANDLING** Keep container upright and tightly closed. Do not reuse container.
KEEP OUT OF REACH OF CHILDREN.

For additional information, refer to Safety Data Sheet.
For additional technical service: www.team-pro.com or info@team-pro.com

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MECHANICAL ELECTRICAL & PLUMBING

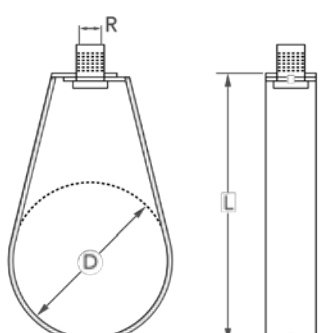
TP SPRINKLER CLAMP

Product Description

- TP Sprinkler Clamp is recommended to provide vertical support to non-insulated fire extinguishing pipes
- By adjusting the position of the sprinkler nut on the threaded rod at the top of the hanger, pipe elevation can be altered
- Made up of mild steel material
- TP Sprinkler Clamp will handle heavy loads
- TP Sprinkler Clamp comes with sprinkler nut
- Available sizes 3/4" to 10" (other dimensions are available upon request)
- Available finishing material : Electro-Galvanized, Hot Dip Galvanized

Approvals

- Underwriter's Laboratories (UL)
- Factory Mutual Approved (FM)
- Electrogalvanized as per ASTM B 633
- Designed to meet MSS Standard SP 58 (type 10) and SP 69



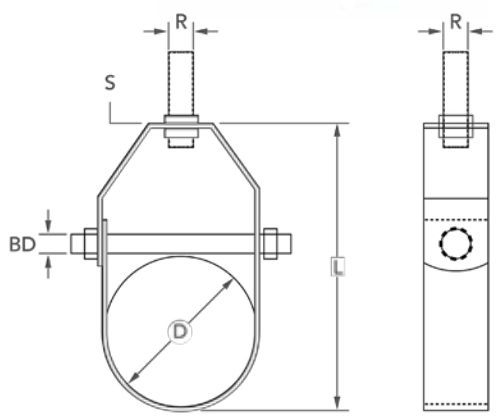
Characteristics

Item Number	Nominal Pipe Size		Approval	Pipe Outer Diameter (D) (mm)	Height (L) (mm)	Threaded Rod Size (R)	Maximum Load (KG)
	Inch	mm					
TP 12001	¾"	DN20	UL & FM	26.7	61	M10	300
TP 12002	1"	DN25	UL & FM	33.4	70	M10	300
TP 12003	1 ¼"	DN32	UL & FM	42.1	78	M10	300
TP 12004	1 ½"	DN40	UL & FM	48.2	84	M10	300
TP 12005	2"	DN50	UL & FM	60.3	102	M10	300
TP 12006	2 ½"	DN65		73.0	118	M10	450
TP 12007	3"	DN80	UL & FM	88.9	144	M10	450
TP 12008	4"	DN100	UL & FM	114.3	176	M10	550
TP 12009	5"	DN125	FM	141.3	220	M12	650
TP 12010	6"	DN150	UL & FM	168.3	262	M12	750
TP 12011	8"	DN200	UL & FM	219.1	305	M12	900
TP 12012	10"	DN250		273.0	320	M12	900

TP CLEVIS CLAMP

Product Description

- TP Clevis Clamp consist of a yoke and a support strap, made from shaped mild steel strip and a joining bolt.
- TP Clevis Clamp needs two nuts to fasten it to the threaded rod. The lower nut will adjust the pipe to the recommended elevation, whereas the upper nut will prevent the support to loose due to the pipe vibration.
- TP Clevis Clamp is recommended to support heavy load pipes
- Made up of mild steel material
- Available sizes 1/2" to 30"
- Available finishing material : Electro-Galvanized, Hot Dip Galvanized



Approvals

- Underwriter's Laboratories (UL)
- Factory Mutual Approved (FM)
- Electrogalvanized as per ASTM B 633
- Designed to meet MSS Standard SP 58 (type 1) and SP 69

Characteristics

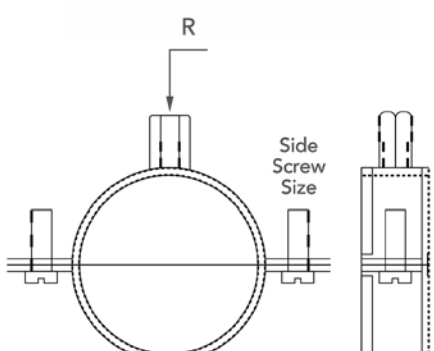
Item Number	Nominal Pipe Size		Approval	Pipe Outer Diameter (D) (mm)	Material Dimension (mm)		Threaded Rod Size (R)	Bolt Diameter (BD)	Maximum Load (KG)
	Inch	mm			Height (L)	Top Hole Diameter (S)			
TP 12050	½"	DN15	UL	21.3	68	11	M10	M8	400
TP 12051	¾"	DN20	UL & FM	26.7	72	11	M10	M8	400
TP 12052	1"	DN25	UL & FM	33.4	76	11	M10	M8	400
TP 12053	1 ¼"	DN32	UL & FM	42.1	87	11	M10	M8	400
TP 12054	1 ½"	DN40	UL & FM	48.2	97	11	M10	M8	400
TP 12055	2"	DN50	UL & FM	60.3	114	11	M10	M8	400
TP 12056	2 ½"	DN65		73.0	142	13	M12	M10	650
TP 12057	3"	DN80	UL & FM	88.9	165	13	M12	M10	650
TP 12058	3 ½"	DN90		101.6	190	13	M12	M10	650
TP 12059	4"	DN100	UL & FM	114.3	202	13	M12	M10	800
TP 12060	5"	DN125	UL & FM	141.3	236	13	M12	M12	800
TP 12061	6"	DN150	UL & FM	168.3	278	13	M12	M12	1100
TP 12062	8"	DN200	UL & FM	219.1	338	13	M12	M12	1100
TP 12063	10"	DN250		273.1	419	17	M16	M16	1500
TP 12064	12"	DN300		323.8	490	21	M20	M20	1500
TP 12065	14"	DN350		355.6	556	21	M20	M20	1750
TP 12066	16"	DN400		406.4	610	25	M24	M24	1750
TP 12067	18"	DN450		457.2	675	25	M24	M24	1750
TP 12068	20"	DN500		508.0	715	32	M30	M24	2200
TP 12069	24"	DN600		609.6	850	32	M30	M24	2700
TP 12070	30"	DN750		762.0	995	32	M30	M24	3000

Note: The Threaded Rod size (R) and Bolt Diameter (BD) can be changed upon request

TP PIPE CLAMP WITH EPDM LINING

Product Description

- TP Pipe Clamp with EPDM lining is recommended to support non-insulated stationary pipes.
- It can be used for supporting pipes along with the ceiling
- It can be used to support steel pipes, copper pipes, PVC pipes, PPR pipes, etc…
- TP Pipe Clamp with EPDM lining can reduce noises up to 18 dB
- Made up of mild steel material
- Can be used on pipes with temperature between -20°C to 110°C
- Available sizes 3/8" to 20"
- Available finishing material : Electro-Galvanized, Hot Dip Galvanized and Plain



Approvals

- Manufacturers Standardization Society ANSI/MSS SP-58 & SP-69 (Type 12)
- Federal Specification WW-H-171E & A-A-1192A (Type25)

Characteristics

Item Number	Nominal Pipe Size		Pipe Outer Diameter (D) (mm)	Range (mm)	Threaded Rod Size (R)	Side Screw size	Maximum Load (KG)
	Inch	mm					
TP 12100	⅜"	DN10	17.1	15-19	M8 X M10	M6	450
TP 12101	½"	DN15	21.3	20-25	M8 X M10	M6	450
TP 12102	¾"	DN20	26.7	26-30	M8 X M10	M6	450
TP 12103	1"	DN25	33.4	32-36	M8 X M10	M6	450
TP 12104	1 ¼"	DN32	42.1	38-43	M8 X M10	M6	450
TP 12105	1 ½"	DN40	48.2	47-51	M8 X M10	M6	450
TP 12106	-	54mm	54.0	53-58	M8 X M10	M6	450
TP 12107	2"	DN50	60.3	60-64	M8 X M10	M6	450
TP 12108	-	63mm	63.0	63-66	M8 X M10	M6	450
TP 12109	-	70mm	70.0	68-72	M8 X M10	M6	450
TP 12110	2 ½"	DN65	73.0	74-80	M8 X M10	M6	600
TP 12111	-	83mm	83.0	81-86	M8 X M10	M6	600
TP 12112	3"	DN80	88.9	87-92	M8 X M10	M6	600
TP 12113	3 ½"	DN90	101.6	99-105	M8 X M10	M6	600
TP 12114	-	110mm	110.0	107-112	M8 X M10	M6	600
TP 12115	4"	DN100	114.3	113-118	M8 X M10	M6	600
TP 12116	-	125mm	125.0	125-130	M8 X M10	M6	600
TP 12117	-	133mm	133.0	131-137	M8 X M10	M6	600
TP 12118	5"	DN125	141.3	138-142	M8 X M10	M6	600
TP 12119	-	150mm	150.0	148-153	M8 X M10	M6	600
TP 12120	-	160mm	160.0	159-166	M8 X M10	M6	600
TP 12121	6"	DN150	168.3	168-172	M8 X M10	M8	600
TP 12122	-	210mm	210.0	200-212	M8 X M10	M8	950
TP 12123	8"	DN200	219.1	215-220	M8 X M10	M8	950
TP 12124	-	250mm	250.0	247-253	M8 X M10	M8	950
TP 12125	10"	DN250	273.0	269-274	M8 X M10	M8	950
TP 12126	-	315mm	315.0	312-318	M8 X M10	M8	1200
TP 12127	12"	DN300	323.8	323-328	M8 X M10	M8	1200
TP 12128	-	355mm	355.0	350-360	M8 X M10	M8	1200
TP 12129	-	400mm	400.0	395-405	M8 X M10	M8	1200
TP 12130	-	450mm	450.0	445-455	M8 X M10	M8	1500
TP 12131	-	500mm	500.0	495-505	M8 X M10	M8	1500

TP SLOTTED STRUT CHANNELS

Application

- Light steel constructions
- Machines and technical facilities construction
- Suspended ceilings
- Mounting and installation
- Construction of ventilation and air duct systems, HVAC
- Sanitary systems
- Photovoltaic constructions
- Channel frame assembly
- Trapeze supports
- For electrical, telecommunication installations and piping.

Profile Length

Item Number	Channel	Length (Meter)
TP 12200	TP STC 27x18x1.2mm	2
TP 12201	TP STC 28X30X1.6mm	2
TP 12202	TP STC 41x21x2mm	2
TP 12203	TP STC 41x21x2mm	3
TP 12204	TP STC 41x21x2.5mm	3
TP 12205	TP STC 41x41x1.5mm	3
TP 12206	TP STC 41x41x2mm	2
TP 12207	TP STC 41x41x2mm	3
TP 12208	TP STC 41x41x2.5mm	3

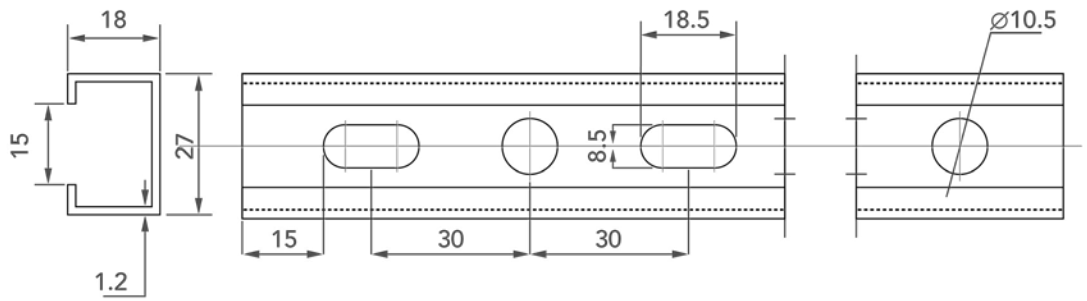
Channels Dimensions

TP STC 27x18x1.2mm

Properties: Galvanized slotted strut channel

Pre-galvanized coating ≥ 19µm

Length = 2m

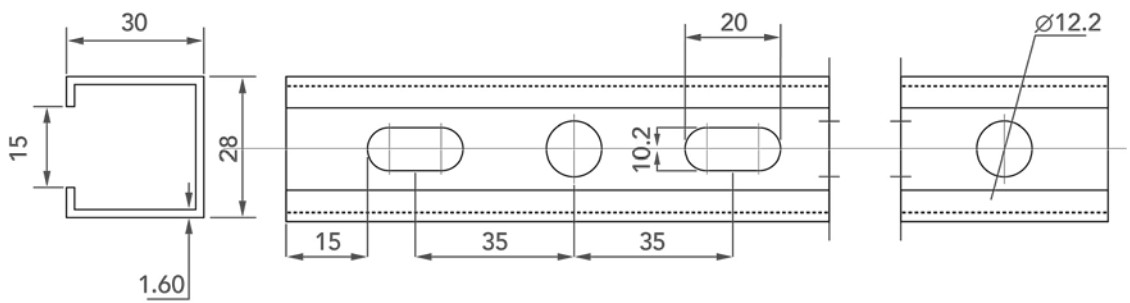


TP STC 28x30x1.6mm

Properties: Galvanized slotted strut channel

Pre-galvanized coating ≥ 19µm

Length = 2m

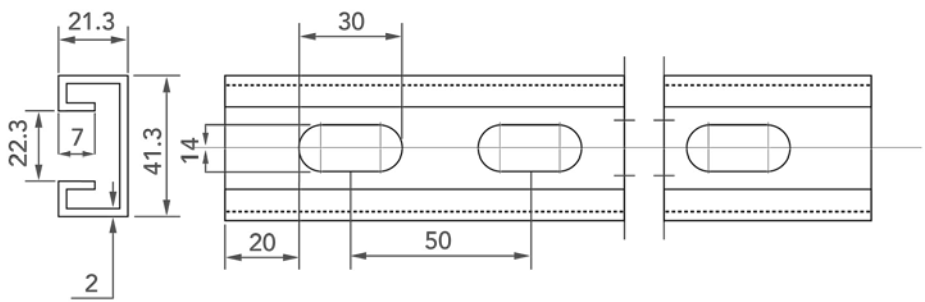


TP STC 41x21x2mm

Properties: Galvanized slotted strut channel

Pre-galvanized coating ≥ 19µm

Length = 2,3m

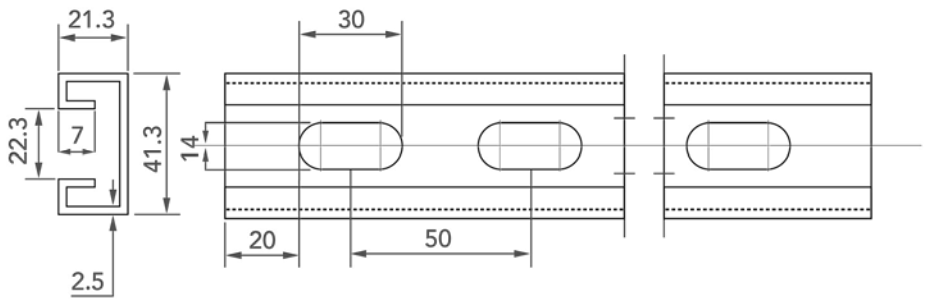


TP STC 41x21x2.5mm

Properties: Galvanized slotted strut channel

Pre-galvanized coating ≥ 19µm

Length = 3m

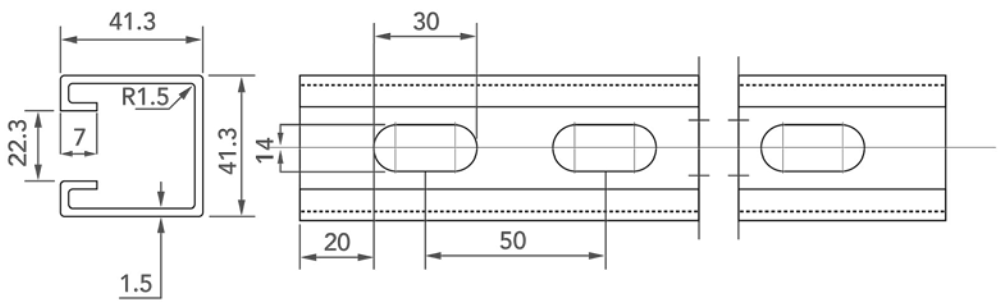


TP STC 41x41x1.5mm

Properties: Galvanized slotted strut channel

Pre-galvanized coating ≥ 19µm

Length = 3m

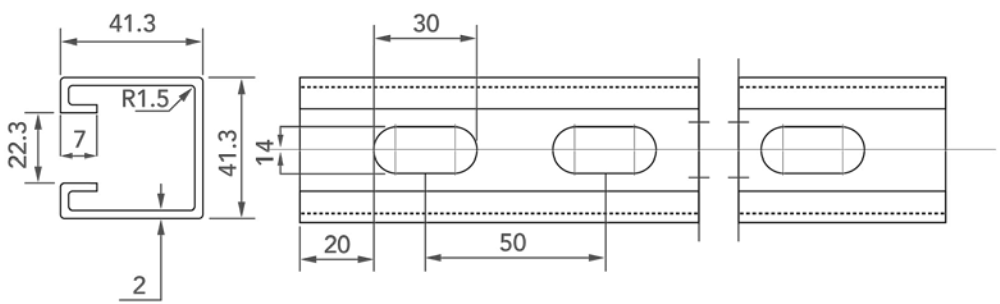


TP STC 41x41x2mm

Properties: Galvanized slotted strut channel

Pre-galvanized coating ≥ 19µm

Length = 2,3m

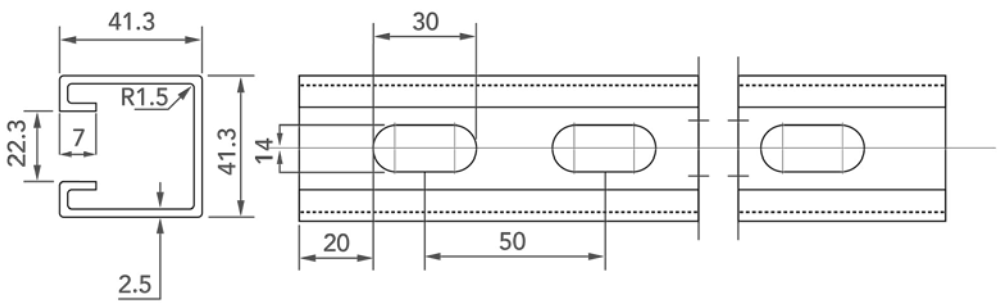


- **TP STC 41x41x2.5mm**

  Properties: Galvanized slotted strut channel

  Pre-galvanized coating ≥ 19µm

  Length = 3m



Characteristics

Dimension	Section [mm x mm]	Weight [Kg/m]	Area [cm2]	Moment of inertia Iy [cm4]	Moment of inertia Iz [cm4]	Resistant module Wy [cm3]	Resistant module Wz [cm3]
TP STC 27x18x1.2mm	27 x 18	0.66	0.84	0.37	0.97	0.34	0.71
TP STC 28x30x1.6mm	28 x 30	1.25	1.60	1.79	2.10	1.03	1.50
TP STC 41x21x2mm	41 x 21	1.55	1.99	0.95	4.44	0.75	2.17
TP STC 41x21x2.5mm	41 x 21	1.71	2.28	1.32	5.54	1.03	2.70
TP STC 41x41x1.5mm	41 X 41	1.65	2.42	4.88	5.99	2.05	2.92
TP STC 41x41x2mm	41 x 41	2.09	2.65	5.84	7.62	2.46	3.72
TP STC 41x41x2.5mm	41 x 41	2.53	3.28	7.08	9.25	2.98	4.51

TP SLOTTED CANTILEVER CHANNEL

Application

- Construction of ventilation and air duct systems, HVAC
- For electrical, telecommunication installations and piping
- Machines and technical facilities construction

Item Number	Channel	Length (Meter)
TP 12250	TP STC 27x18x1.2mm	0.20
TP 12251	TP STC 27x18x1.2mm	0.30
TP 12252	TP STC 38X40X2mm	0.20
TP 12253	TP STC 38X40X2mm	0.25
TP 12254	TP STC 38X40X2mm	0.30
TP 12255	TP STC 38X40X2mm	0.35
TP 12256	TP STC 38X40X2mm	0.40
TP 12257	TP STC 38X40X2mm	0.50
TP 12258	TP STC 38X40X2mm	0.60
TP 12259	TP STC 41x21x2.5mm	0.15
TP 12260	TP STC 41x21x2.5mm	0.30
TP 12261	TP STC 41x21x2.5mm	0.45
TP 12262	TP STC 41x41x2.5mm	0.15
TP 12263	TP STC 41x41x2.5mm	0.30
TP 12264	TP STC 41x41x2.5mm	0.45
TP 12265	TP STC 41x41x2.5mm	0.60
TP 12266	TP STC 41x41x2.5mm	0.75

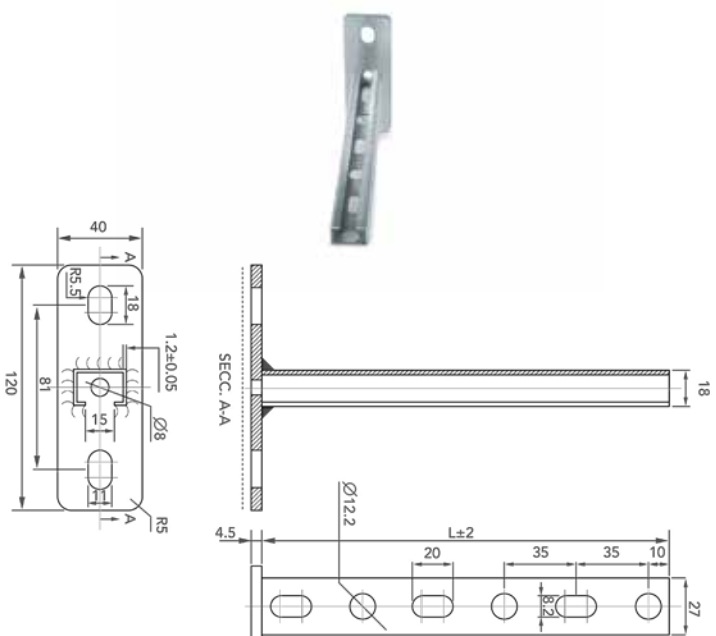
Cantilever Channel Dimension

- **TP Cantilever Channel 27x18x1.2mm**

  Properties: Zinc-plated slotted cantilever

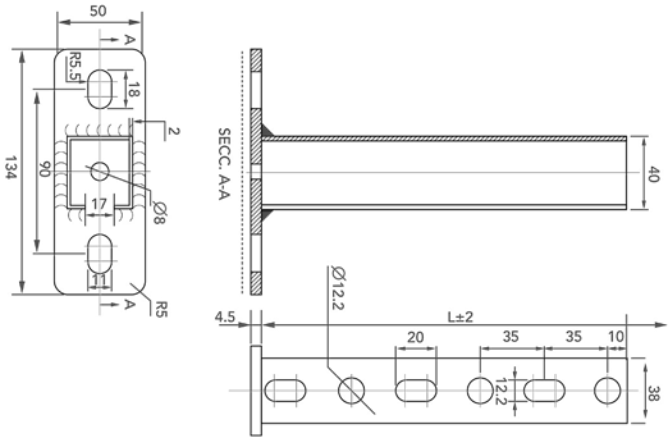
  Zinc-plated coating ≥ 5μm

  Length = 0.2, 0.3m



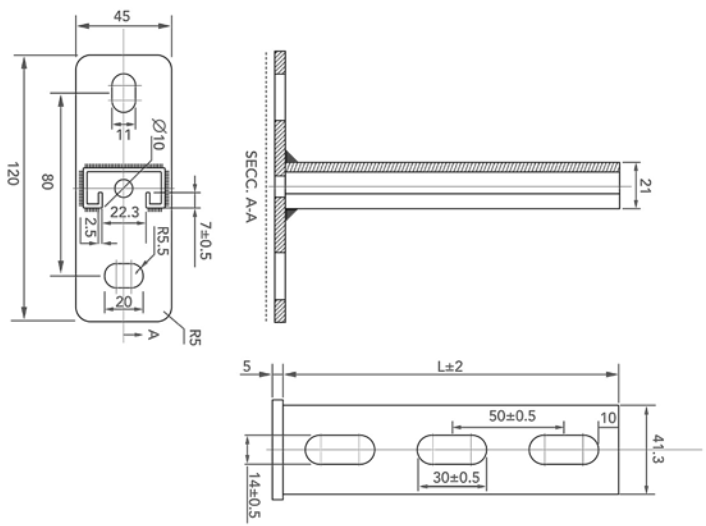
TP Cantilever Channel 38x40x2mm

Properties: Zinc-plated slotted cantilever
Zinc-plated coating ≥ 5µm
Length = 0.2, 0.25, 0.3, 0.35, 0.4, 0.5, 0.6m



TP Cantilever Channel 41x21x2.5mm

Properties: Zinc-plated slotted cantilever
Zinc-plated coating ≥ 5µm
Length = 0.15, 0.3, 0.45m

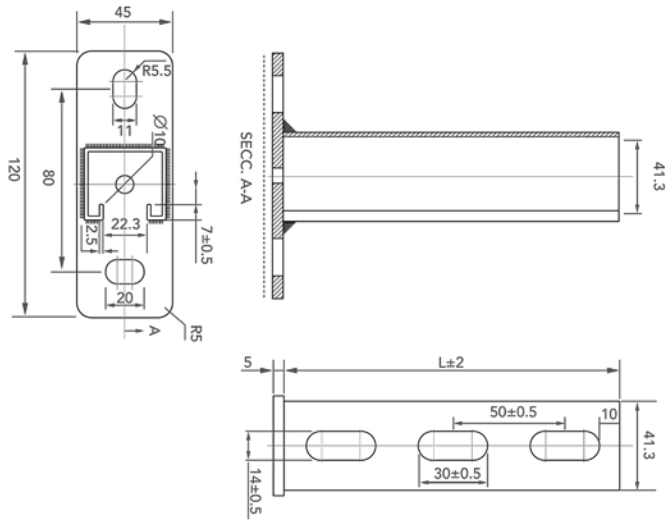


- **TP Cantilever Channel 41x41x2.5mm**

  Properties: Zinc-plated slotted cantilever

  Zinc-plated coating ≥ 5µm

  Length = 0.15, 0.3, 0.45, 0.6, 0.75m



Characteristics

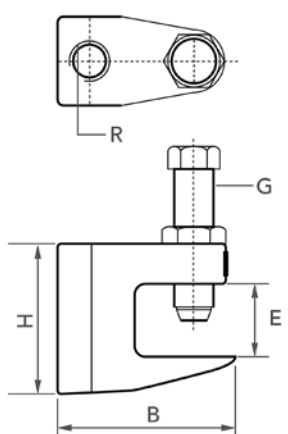
Dimension	Section [mm x mm]	Area [cm2]	Moment of inertia Iy [cm4]	Moment of inertia Iz [cm4]	Resistant module Wy [cm3]	Resistant module Wz [cm3]
TP STC 27x18x1.2mm	27 x 18	0.84	0.37	0.97	0.34	0.71
TP STC 38x40x2mm	38 x 40	2.55	5.39	6.18	2.39	3.25
TP STC 41x21x2.5mm	41 x 21	2.28	1.32	5.54	1.03	2.70
TP STC 41x41x2.5mm	41 x 41	3.28	7.08	9.25	2.98	4.51

TP BEAM CLAMP

Product Description

- TP Beam Clamp is made up of Malleable Iron (ASTM A47 Grade 32510). It consists of a hardened steel cup, point set screw and a lock nut
- TP Beam Clamp is used in structural attachment to top or bottom of metal beams, purlins, channels or angel iron
- Available sizes M8, M10, M12 & M16
- Electrogalvanized casting tolerance according to DIN 1684

Item Number	Description	Bolt Size (G)	Threaded Rod (R)	H (mm)	B (mm)	E (mm)	Maximum Load (N)
TP 12300	TP Beam Clamp M8	M08	M08	45	50	21	1200
TP 12301	TP Beam Clamp M10	M10	M10	47	50	21	2500
TP 12302	TP Beam Clamp M12	M12	M12	53	58	25	3500
TP 12303	TP Beam Clamp M16	M16	M16	58	58	27	5500



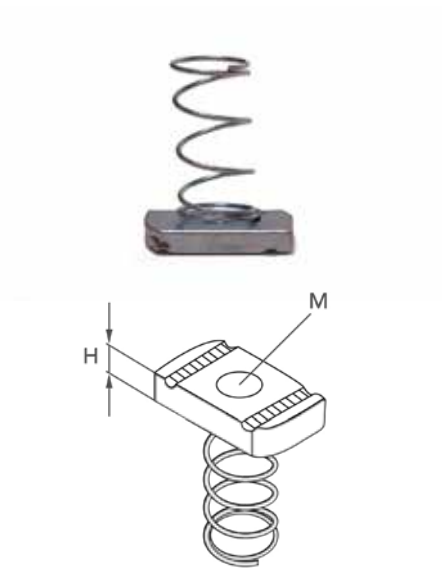
TP SPRING NUT - TP SN & TP CN & TP CNT

Application

- It is used for easy and safe fixing of various fasteners to G Channels.
- Serration offers bigger grip and horizontal resistance, and can be considered for seismic design cases.

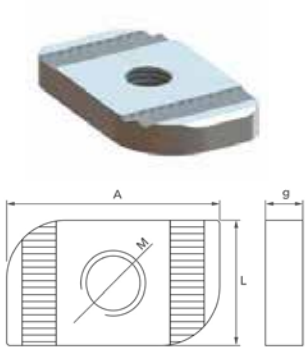
TP SN - TP Spring Nut

Item Number	Description	Size	Material	H (mm)
TP 4393	TP Spring Nut	M8	Delta Protect	6
TP 4394	TP Spring Nut	M10	Delta Protect	6
TP 4395	TP Spring Nut	M12	Delta Protect	6
TP 4060	TP Spring Nut	M8	Galvanized	6
TP 4061	TP Spring Nut	M10	Galvanized	6
TP 4062	TP Spring Nut	M12	Galvanized	8
TP 4063	TP Spring Nut	M8	HDG	6
TP 4064	TP Spring Nut	M10	HDG	6
TP 4065	TP Spring Nut	M12	HDG	6



TP CN - Channel Nut With Teeth

Item Number	Description	Size	Material	Dimensions L x A x g
TP 4067	TP Channel Nut with Teeth	M8	Galvanized	20x34x6
TP 4068	TP Channel Nut with Teeth	M10	Galvanized	20x34x6
TP 4069	TP Channel Nut with Teeth	M12	Galvanized	20x34x6
TP 4070	TP Channel Nut with Teeth	M16	Galvanized	20x34x6



TP CNT- Top Spring Channel Nut

Item Number	Description	Size	Material
TP 4722	TP Top Spring Channel Nut	M8	GVZ
TP 4723	TP Top Spring Channel Nut	M10	GVZ
TP 4724	TP Top Spring Channel Nut	M12	GVZ
TP 4725	TP Top Spring Channel Nut	M8	HDG
TP 4726	TP Top Spring Channel Nut	M10	HDG
TP 4727	TP Top Spring Channel Nut	M12	HDG

TP THREADED ROD

Features and Benefits

- According to DIN 975
- Material: steel
- Zinc-plated
- Tested for fire safety

Characteristics

Anchor type			M8						M10						M12						M14					
			GVZ				A4	C	GVZ				A4	C	GVZ				A4	C	GVZ				A4	C
			4.8	5.8	8.8	10.9			4.8	5.8	8.8	10.9			4.8	5.8	8.8	10.9			4.8	5.8	8.8	10.9		
Stressed cross sectional area anchor rod	A_s	[mm²]	36.6						58.0						84.3						115.0					
Section modolus	W	[mm³]	31.2						62.3						109.2						173.9					
Design value of bending moment	$M^0_{Rd.S}$	[Nm]		15.2	24.0	28.1	16.7	20.8		29.6	48.0	56.1	33.3	41.6		52.0	84.0	98.0	59.0	73.6		83.2	133.6	156.7	93.6	116.8
Yield strength anchor rod	f_{yk}	[N/mm²]	320	400	640	900	450	560	320	400	640	900	450	560	320	400	640	900	450	560	320	400	640	900	450	560
Tensile strength anchor rod	f_{uk}	[N/mm²]	400	500	800	1000	700	700	400	500	800	1000	700	700	400	500	800	1000	700	700	400	500	800	1000	700	700

Characteristics

Anchor type			M16						M20					
			GVZ				A4	C	GVZ				A4	C
			4.8	5.8	8.8	10.9			4.8	5.8	8.8	10.9		
Stressed cross sectional area anchor rod	A_s	[mm²]	157.0						245.0					
Section modolus	W	[mm³]	277.5						540.9					
Design value of bending moment	$M^0_{Rd.S}$	[Nm]		132.8	212.8	249.3	148.7	185.6		259.2	415.2	486.7	291.0	363.2
Yield strength anchor rod	f_{yk}	[N/mm²]	320	400	640	900	450	560	320	400	640	900	450	560
Tensile strength anchor rod	f_{uk}	[N/mm²]	400	500	800	1000	700	700	400	500	800	1000	700	700

Anchor type			M22						M24					
			GVZ				A4	C	GVZ				A4	C
			4.8	5.8	8.8	10.9			4.8	5.8	8.8	10.9		
Stressed cross sectional area anchor rod	A_s	[mm²]	303						353.0					
Section modolus	W	[mm³]	743.9						935.5					
Design value of bending moment	$M^0_{Rd.S}$	[Nm]		357.6	572.8	669.3	401.3	500.8		448.0	716.8	841.3	502.6	627.2
Yield strength anchor rod	f_{yk}	[N/mm²]	320	400	640	900	450	560	320	400	640	900	450	560
Tensile strength anchor rod	f_{uk}	[N/mm²]	400	500	800	1000	700	700	400	500	800	1000	700	700

Characteristics

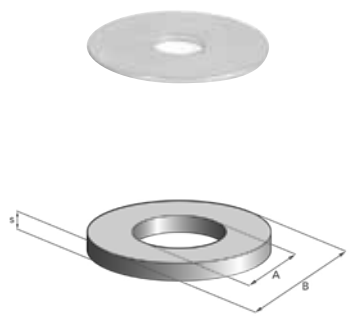
Anchor type			M27						M30						M36	M39	M42
			GVZ				A4	C	GVZ				A4	C	GVZ	GVZ	GVZ
			4.8	5.8	8.8	10.9			4.8	5.8	8.8	10.9			5.8	5.8	5.8
Stressed cross sectional area anchor rod	A_s	[mm²]	459.0						561.0						817.0	976.0	1121
Section modolus	W	[mm³]	1387						1874						3294	4301	5294
Design value of bending moment	$M^0_{Rd.S}$	[Nm]		666.4	1066	1248	748.1	933.6		898.4	1438	1687	1008	1258	1581	2069	2551
Yield strength anchor rod	f_{yk}	[N/mm²]	320	400	640	900	450	560	320	400	640	900	450	560	400	400	400
Tensile strength anchor rod	f_{uk}	[N/mm²]	400	500	800	1000	700	700	400	500	800	1000	700	700	500	500	500

TP WASHER AND TP NUT

TP Washer - Zinc Plated

- Materials: Steel DD11 (material no. 1.0139) acc. to DIN EN 10111
- Zinc Plating: Electro zinc plated, min. 3 µm

Item Number	Description	Size*	Thickness s (mm)	External Ø B (mm)	Hole Ø A (mm)
TP 4610	TP Washer (Zinc Plated)	M8x17	1.6	17	8.4
TP 4611	TP Washer (Zinc Plated)	M8x28	2.6	28	8.4
TP 4612	TP Washer (Zinc Plated)	M8x40	3	40	8.4
TP 4613	TP Washer (Zinc Plated)	M10x21	2	21	10.5
TP 4614	TP Washer (Zinc Plated)	M10x28	2	28	10.5
TP 4615	TP Washer (Zinc Plated)	M10x40	3	40	10.5
TP 4616	TP Washer (Zinc Plated)	M12x24	2.5	24	12.5
TP 4617	TP Washer (Zinc Plated)	M12x40	3	40	12.5
TP 4618	TP Washer (Zinc Plated)	M16x30	3	30	16.5

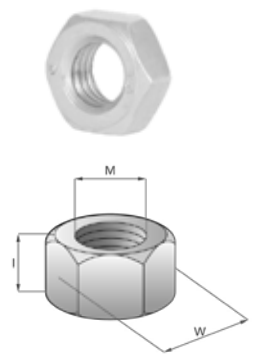


(Diameter) x (External Diameter) - mm

TP Hexagonal Nut - Zinc Plated

- According to DIN 934
- Materials: Acc. to DIN EN 20898-2; min. strength category 04
- Zinc Plating: Electro zinc plated, min. 5 µm

Item Number	Description	Size	Width across nut
TP 4619	TP Hexagonal Nut (Zinc Plated)	M6	10
TP 4620	TP Hexagonal Nut (Zinc Plated)	M8	13
TP 4621	TP Hexagonal Nut (Zinc Plated)	M10	17
TP 4622	TP Hexagonal Nut (Zinc Plated)	M12	19
TP 4623	TP Hexagonal Nut (Zinc Plated)	M16	24



TP CR-C40

Product Description

- TP CR-C40, is high performance mortar produced by Sozeri Materials for structural strengthening.
- It has high thixotropic characteristic. EN 1504-3 / R4
- High mechanical and durability characteristics with cement based one component, silica fume and fiber modified, repair and strengthening mortar

Item Number	Description	Size
TP 13000	TP Structural Repair CR-C40	25 kg kraft bags

Characteristics

- High thixotropic characteristics
- Can be applied easily in wall and ceiling applications
- One component. Application is made by mixing with the specified amount of water
- It has high mechanical and durability characteristics
- It has high resistance against day-night and summer-winter cycles
- The intended consistency can adjustable
- It can be applied by trowel or spraying method

Technical Properties		TP CR-C40	
Product Chemistry	Cement based, highly thixotropic	Application Thickness	Min.2mm Max. 50 mm
Colour	Grey	Application Temperature	+5°C + 35°C
Compressive Strength (EN 12190) (28 Days)	> 45N/mm^2	Service Temperature	-10°C + 80°C
Bonding Strength (EN 1542) (Concrete) (28 Days)	> 2.0N/mm^2	Pot Life (+20°C)	40 min
Modulus of Elasticity (28. Days)	> 20000N/mm^2	Fully Cured (+20°C)	28 days
Capillary Water Absorption (TS EN 13057)	> 0.5Kg/m^2 min^{05}		

Application Details

- Wall surface should be cleaned from all dust and foreign substances and it should be moistured
- An appropriate amount of water is poured into the mixing bucket then TP CR-C40 is added slowly
- Mix approximately for 3 minutes with mechanic mixer, which has minimum 500 rpm to reach the applicable consistency
- Mixing should be carried out with mechanical mixers instead of hands
- The surface of mortar should be moisturized 12 hours after it gets hardened following the completion of first curing
- Application should not be made when the temperature lower than +5°C and higher than +35°C

Note: Total amount of water needed per 1 package (25Kg) is 4.5 - 4.75 liters

Usage Areas

- Repair, strengthening and maintenance of reinforced concrete members
- Repair and strengthening of masonry structures & structural members under load
- Repair of structures that come into contact with ground water and sea water
- Repair and levelling the concrete surface
- Reinforced concrete members provide protection against sulphate and chlorine attack in order to obtain an impermeable concrete

Cleaning of tools

Tools can be cleaned with water. If the product is hardened, it can be cleaned mechanically

Storage Conditions

When stored away from moisture and UV rays, it has 6 months of shelf life.
Opened packages should be used in one week preserving the storage conditions.

Responsibility

Application suggestions are based on experimental data. Actual values can vary due to conditions out of control.
Suggestions do not take on any other obligations.

TP CR-C60

Product Description

- TP CR-C60, is high performance mortar produced by Sozeri Materials for structural strengthening.
- It has high thixotropic characteristic. EN 1504-3 / R4
- High mechanical and durability characteristics with cement based one component, silica fume and fiber modified, repair and strengthening mortar

Item Number	Description	Size
TP13001	TP Structural Repair CR-C60	25 kg kraft bags

Characteristics

- High thixotropic characteristics
- Can be applied easily in wall and ceiling applications
- One component. Application is made by mixing with the specified amount of water
- It has high mechanical and durability characteristics
- It has high resistance against day-night and summer-winter cycles
- The intended consistency can adjustable
- It can be applied by trowel or spraying method

Technical Properties		TP CR-C60	
Product Chemistry	Cement based, highly thixotropic	Application Thickness	Min.2mm Max. 50 mm
Colour	Grey	Application Temperature	+5°C + 35°C
Compressive Strength (EN 12190) (28 Days)	> 60N/mm^2	Service Temperature	-10°C + 80°C
Bonding Strength (EN 1542) (Concrete) (28 Days)	> 2.0N/mm^2	Pot Life (+20°C)	40 min
Modulus of Elasticity (28. Days)	> 20000N/mm^2	Fully Cured (+20°C)	28 days
Capillary Water Absorption (TS EN 13057)	> 0.5Kg/m^2 min^{05}		

Application Details

- Wall surface should be cleaned from all dust and foreign substances and it should be moistured
- An appropriate amount of water is poured into the mixing bucket then TP CR-C60 is added slowly
- Mix approximately for 3 minutes with mechanic mixer, which has minimum 500 rpm to reach the applicable consistency
- Mixing should be carried out with mechanical mixers instead of hands
- The surface of mortar should be moisturized 12 hours after it gets hardened following the completion of first curing
- Application should not be made when the temperature lower than +5°C and higher than +35°C

Note: Total amount of water needed per 1 package (25Kg) is 4.5 - 4.75 liters

Usage Areas

- Repair, strengthening and maintenance of reinforced concrete members
- Repair and strengthening of masonry structures & structural members under load
- Repair of structures that come into contact with ground water and sea water
- Repair and levelling the concrete surface
- Reinforced concrete members provide protection against sulphate and chlorine attack in order to obtain an impermeable concrete

Cleaning of tools

Tools can be cleaned with water. If the product is hardened, it can be cleaned mechanically

Storage Conditions

When stored away from moisture and UV rays, it has 6 months of shelf life.
Opened packages should be used in one week preserving the storage conditions.

Responsibility

Application suggestions are based on experimental data. Actual values can vary due to conditions out of control.
Suggestions do not take on any other obligations.

TP CR-C120

Product Description

- TP CR-C120 is high performance mortar produced by Sozeri Materials for the structural strengthening. EN 1504-3 / R4
- High strength mortar with cement based one component, polymer modified.

Item Number	Description	Size
TP 13002	TP Structural Repair CR-C120	20 kg kraft bags

Characteristics

- Application thickness is between 2-100 mm
- Can be applied with steel fiber
- Fully serviceable after 7 days
- Application temperature must be between +5°C and 35°C
- Service temperature is between -10°C and +80°C
- Mechanical characteristics depend on reinforcement material
- It is recommended to use 6-13 mm steel fibers for high strength

Properties	Unit	Standard	TP CR-C120		
			1 Day	7 Days	28 Days
Compressive Strength	Mpa	EN 12190	50	90	120
Flexural Strength	Mpa	EN 196-1	8	12	17
Wear Resistance	$cm^3/50cm^2$	EN 13892-3	5.4 - 5.7		
Heat Resistance	°C	-	250		
Fire Resistance		EN13501-1	A1		
Density	kg/m^3	EN 12190	2400		
Freeze-Thaw Resistance	kg/m^2	CEN TS 12390-9	< 0.08		
Water Permeability		DIN 1048	Water Penetration < 1 mm		
Setting Time	hours	EN 196-3	5		

Application Details

- Wall surface should be cleaned from all dust and foreign substances and it should be moistured
- An appropriate amount of water is poured into the mixing bucket then TP CR-C120 is added slowly
- Mix approximately for 5 minutes with mechanic mixer, which has minimum 600 rpm to reach the applicable consistency
- Mixing should be carried out with mechanical mixers instead of hands
- After a homogenous mixture is achieved, mortar is rested for 3 minutes in average and it will be ready for application after mixing for another minute approximately
- The surface of mortar should be moisturized 12 hours after it gets hardened following the completion of first curing
- Application should not be made when the temperature lower than +5 °C and higher than +35 °C

Note: Total amount of water needed per 1 package (20Kg) is 1.9 - 2.1 liters

Cleaning of tools

Tools can be cleaned with water. If the product is hardened, it can be cleaned mechanically

Storage Conditions

When stored away from moisture and UV rays, it has 6 months of shelf life.
Opened packages should be used in one week preserving the storage conditions.

Responsibility

Application suggestions are based on experimental data. Actual values can vary due to conditions out of control.
Suggestions do not take on any other obligations.

TP GROUT-C90

Product Description

- TP Grout-C90 is high performance mortar produced by Sozeri Materials for the structural strengthening. EN 1504-3 / R4
- High strength mortar with cement based one component and polymer modified.

Item Number	Description	Size
TP 13003	TP Grout - C90	25 kg kraft bags

Characteristics

- Application thickness is between 2-150 mm
- Fully serviceable after 7 days
- Application temperature must be between +5°C and 35°C
- Service temperature is between -10°C and +80°C
- Mechanical characteristics depend on reinforcement material
- It is recommended to use 6-13 mm steel fibers for high strength

Properties	Unit	Standard	TP Grout-C90		
			1 Day	7 Days	28 Days
Compressive Strength	Mpa	EN 12190	40	60	90
Flexural Strength	Mpa	EN 196-1	6	10	13
Wear Resistance	$cm^3/50cm^2$	EN 13892-3	5.4 - 5.7		
Heat Resistance	°C	-	250		
Fire Resistance		EN13501-1	A1		
Density	kg/m^3	EN 12190	2400		
Freeze-Thaw Resistance	kg/m^2	CEN TS 12390-9	< 0.08		
Water Permeability		DIN 1048	Water Penetration < 1 mm		
Setting Time	hours	EN 196-3	5		

Application Details

- Wall surface should be cleaned from all dust and foreign substances and it should be moistured
- An appropriate amount of water is poured into the mixing bucket then TP Grout-C90 is added slowly
- Mix approximately for 5 minutes with mechanic mixer, which has minimum 600 rpm to reach the applicable consistency
- Mixing should be carried out with mechanical mixers instead of hands
- After a homogenous mixture is achieved, mortar is rested for 3 minutes in average and it will be ready for application after mixing for another minute approximately
- The surface of mortar should be moisturized 12 hours after it gets hardened following the completion of first curing
- Application should not be made when the temperature lower than +5 °C and higher than +35 °C

Note: Total amount of water needed per 1 package (25Kg) is 2.25 - 2.75 liters

Cleaning of tools

Tools can be cleaned with water. If the product is hardened, it can be cleaned mechanically

Storage Conditions

When stored away from moisture and UV rays, it has 6 months of shelf life.
Opened packages should be used in one week preserving the storage conditions.

Responsibility

Application suggestions are based on experimental data. Actual values can vary due to conditions out of control.
Suggestions do not take on any other obligations.

TP CARBON MESH

Product Description

- TP Carbon Mesh products are technical textiles produced for structural strengthening with high strength and high adherence properties of special reactive coating.
- TP Carbon Mesh products are perfectly compatible with thixotropic strengthening mortars TP CR-C60 and ultra high performance strengthening mortars TP CR-C100 and TP CR-C120.

Item Number	Description	Size
TP 13004	TP Carbon Mesh 370	1 m x 50 m
TP 13005	TP Carbon Mesh 370	1,95 m x 50 m
TP 13006	TP Carbon Mesh 408	1 m x 50 m
TP 13007	TP Carbon Mesh 408	1,95 m x 50 m

Characteristic

- High tensile strength, durability characteristics and ductility
- Removability without damaging the structure
- Easy applicability
- High adherence properties with special reactive coating
- Coating: Coated with reactive component
- Standard Measurements: 1,95 m x 50 m / 1 m x 50 m
- Storage Conditions: In original packaging and in a cool, dry and covered area
- Cutting: Industrial scissors can be used

Technical Properties	Unit	Carbon Mesh 370	Carbon Mesh 408
Weight (Main Direction)	g/m^2	370	408
Weight (Second Direction)	g/m^2	-	-
Elasticity Module	kN/mm^2	≥ 240	≥ 240
Tensile Strength	Mpa	> 4300	> 4300
Density	g/m^3	1.78	1.78
Elongation	%	1.8	1.8
Coating Type		Special Active Coating	SBR - Latex
Standard Measurements	m x m	1 x 25	1 x 25
Aperture Size	mm x mm	25 x 25	21.1 x 21.6
Cross-Section Area (Main Direction)	mm^2/m	71	90

Usage Areas

- Strengthening of historical buildings
- Reinforcing of masonry elements
- Strengthening of vaults and arches
- Increasing the security measures by applying them in excavation works
- Structural reinforcement of reinforced concrete elements such as column, beam and floor

Responsibility

Application suggestions are based on experimental data. Actual values can vary due to conditions out of control. Suggestions do not take on any other obligations.

TP MESH STAINLESS STEEL ANCHOR

Product Description

- TP Mesh Stainless steel Anchor developed as a supplementary product in strengthening of historical buildings and reinforced concrete buildings. With specially designed surface texture, it exhibits high adherence and load bearing characteristics.
- It is applied without requiring additional labor costs with its structure that allows quick application.

Item Number	Description	Diameter (mm)	Length* (m)
TP 13008	TP Mesh Stainless Steel Anchor 304	6	10
TP 13009	TP Mesh Stainless Steel Anchor 304	8	10
TP 13010	TP Mesh Stainless Steel Anchor 304	10	10
TP 13011	TP Mesh Stainless Steel Anchor 304	12	10
TP 13012	TP Mesh Stainless Steel Anchor 316	6	10
TP 13013	TP Mesh Stainless Steel Anchor 316	8	10
TP 13014	TP Mesh Stainless Steel Anchor 316	10	10
TP 13015	TP Mesh Stainless Steel Anchor 316	12	10

**Material will be delivered in Coils*

Characteristic

- It exhibits perfect harmony with textile reinforcement used
- It allows small deformations, which will meet the elastic behavior of the wall and exhibits complete harmony with masonry building
- It is ready to use. It saves time from anchorage preparation processes with its special design and reduces labor
- It exhibits high adherence with lime-based mortars with special surface properties. It prevents epoxy use in historical buildings and it is in harmony with the authentic qualities of the building with products with mortar

Grade	304				316			
Diameter (mm)	6	8	10	12	6	8	10	12
Cross-sectional Area (mm2)	8.9	10.4	12.9	15.1	8.9	10.4	12.9	15.1
Ultimate Tensile Strength (MPa)	994.38	1153.84	1240.03	1251.65	997.53	1163.46	1124.03	1242.38
Elongation (%)	4.1	4.8	5.7	n/m	4.1	4.8	5.7	n/m
Yield Point Strength (E=0,2%) (MPa)	919.30	1038.46	1038.75	1066.22	917.97	1028.84	945.74	1063.57
Elasticity Modulus (GPa)	122	122	122	122	125	125	125	125
Ultimate Shear Load (kN)	7.5	n/m	13.3	n/m	7.5	8.7	11.7	n/m
Ultimate Shear Strength (MPa)	842.69	n/m	906.97	n/m	842.69	836.53	797.86	n/m
Thermal Conductivity (W/mK)	16.2	16.2	16.2	16.2	16.3	16.3	16.3	16.3
Thermal Expansion ($1x10^{-6}$/K)	17.2	17.2	17.2	17.2	15.9	15.9	15.9	15.9
Melting Point (°C)	1450	1450	1450	1450	1400	1400	1400	1400

Usage Areas

- In strengthening historical buildings with textile reinforcements
- In masonry walls
- In vaults and domes
- In strengthening applications of concrete buildings with carbon fabric
- In strengthening of headlining with textile reinforcement

FOAM
& SILICON


SEALPRO-S
ERSAL SANITARY SEAL
TEAM PRO

TP PU FOAM-B3

Product Description

TP PU Foam-B3 hand held is one-component polyurethane foam hardening by air humidity.
TP PU Foam-B3 hand held provides good sound and thermal insulation. It adheres well to most construction materials such as wood, concrete, porous concrete, brick, metal and aluminum, but not to polyethylene, silicone and PTFE.
TP PU Foam-B3 is antibacterial.

Item Number	Description	Size*
TP 1401	TP PU Foam-B3	300 ml aerosol can
TP 1402	TP PU Foam-B3	750 ml aerosol can

**other packaging are available by agreement*

TP PU Foam -B3
300ml

TP PU Foam -B3
750ml

Tests and Certificates

- GEV-EMICODE EC-1 PLUS (very low emission)

Usage Area

It is used in construction industry for sealing, filling, insulating, fixing and mounting (of window and door frames). It enables quick filling and sealing providing protection against cold, draught and noise. It can also be used for thermal insulation of plumbing installations and heating systems, fixing of electrical installations, air conditioning systems etc.

Characteristic

Volume	FEICA OCF TM 1003	33-38l (free foamed) (750ml)
Specific density	FEICA OCF TM 1019	20-25kg/m^3
Application temperature		min. +5°C (surface), 20-25°C (can)
Tack free time	FEICA OCF TM 1014	5-10min.
Cutting time	FEICA OCF TM 1005	25-30min.
Hardening time		1.5-5 hours, depending on temperature and humidity
Temperature resistance		from -40°C to +90°C
Dimensional stability	FEICA OCF TM 1004	maximum ±5%
Water absorption	DIN 53428	maximum 1 vol. %
Compression strength	FEICA OCF TM 1011	0.04-0.05MPa
Tensile strength	FEICA OCF TM 1018	0.12-0.14MPa
Elongation at break	FEICA OCF TM 1018	20-25%
Thermal conductivity	DIN 52612	0.039W/(m K) at 20°C
Flammability class	EN 13501 - 1	F

Application Details

- Surfaces should be clean, free of dust, grease and other impurities. Dry and porous surfaces should be moistened with water.
- The optimal temperature of can at work is room temperature. At lower temperature put the can into warm water with maximum temperature of 40°C for about 20 minutes.
- Before use shake can thoroughly with the valve upside down. Remove the protection cap and screw on the nozzle with a tube.
- Turn the can with the valve upside down and apply pressure on the valve to activate the foam.
- You only have to fill the gap partially as the foam expands from 2 to 3 times. If you are filling a gap wider than 5cm, work in layers. Apply the second layer once the first one has hardened. You can speed up the process of hardening by spraying the foam with water.
- Once hardened, foam should be protected against UV light. Once the foam has hardened, cut it with a sharp knife and finish with plastering, sealing, covering, painting etc.
- If you do not use the entire can, clean the valve with a cleaner or acetone. Hardened foam can only be removed mechanically.

Storage

18 months (from +5°C to +25°C) or at lower temperatures for shorter periods of time (e.g. during transport).

Higher temperatures shorten storage life. Store the cans in an upright position.

Warning

Instructions contained in this document are based on our research and experience, however, due to specific conditions and working methods we recommend that you perform preliminary tests prior to any application of our products.

TP PU FOAM-B1 FIRE RESISTANCE

Product Description

TP PU Foam-B1 Fire Resistance hand held is a one-component polyurethane foam providing good sound and thermal insulation. It adheres well to most construction materials such as wood, concrete, porous concrete, brick, metal and aluminum, but not to polyethylene, silicone and PTFE. TP PU Foam-B1 Fire Resistance is antibacterial.

Item Number	Description	Size*
TP 1403	TP PU Foam-B1 Fire Resistance	750 ml aerosol can

other packaging are available by agreement

Tests and Certificates

- DIN 4102-1 — B1
- EN 13501-2 — EI 240
- BS 476, part 20
- GEV-EMICODE — EC-1 PLUS (very low emission)
- CERTIFIRE CERTIFICATE

Usage Area

It is used in construction industry for sealing, filling, insulating, mounting and installing (electrical installations, wall penetrations, fire door, vaults etc.), especially when greater resistance to burning is required.

Characteristic

Volume	FEICA OCF TM 1003	33-38l (free foamed) (750ml)
Specific density	FEICA OCF TM 1019	22-26kg/m^3
Application temperature		min. +5°C (surface), 20-25°C (can)
Tack free time	FEICA OCF TM 1014	5-10min.
Cutting time	FEICA OCF TM 1005	20-25min.
Hardening time		1.5-5 hours, depending on temperature and humidity
Temperature resistance		from -40°C to +90°C
Dimensional stability	FEICA OCF TM 1004	maximum ±5%
Water absorption	DIN 53428	maximum 1 vol. %
Compression strength	FEICA OCF TM 1011	0.04-0.05MPa
Tensile strength	FEICA OCF TM 1018	0.12-0.14MPa
Elongation at break	FEICA OCF TM 1018	15-20%
Thermal conductivity	DIN 52612	0.039W/(m K) at 20°C
Flammability class	DIN 4102-1 EN 13501-2 BS 476, part 20	B1 EI 240

Application Details

- Surfaces should be clean, free of dust, grease and other impurities. Dry and porous surfaces should be moistened with water.
- The optimal temperature of can at work is room temperature. At lower temperature put the can into warm water with maximum temperature of 40°C for about 20 minutes.
- Before use shake can thoroughly with the valve upside down. Remove the protection cap and screw on the nozzle with a tube.
- Turn the can with the valve upside down and apply pressure on the valve to activate the foam.
- You only have to fill the gap partially as the foam expands from 2 to 3 times. If you are filling a gap wider than 5cm, work in layers. Apply the second layer once the first one has hardened. You can speed up the process of hardening by spraying the foam with water.
- Once hardened, foam should be protected against UV light. Once the foam has hardened, cut it with a sharp knife and finish with plastering, sealing, covering, painting etc.
- If you do not use the entire can, clean the valve with a cleaner or acetone. Hardened foam can only be removed mechanically.

Storage

12 months (from +5°C to +25°C) or at lower temperatures for shorter periods of time (e.g. during transport). Higher temperatures shorten storage life. Store the cans in an upright position.

Warning

Instructions contained in this document are based on our research and experience, however, due to specific conditions and working methods we recommend that you perform preliminary tests prior to any application of our products.

TP NEUTRAL SILICONE

Product description

- TP Neutral is a permanently elastic, neutral silicone one-component sealant used for sealing joint of various materials.
- Does not slump in vertical joints
- Excellent adhesion to most materials in construction without a primer
- For good adhesion onto porous materials, use primer KVZ 16
- Good characteristics
- Movement accommodation up to 20%
- Resistant to various weather conditions: rain, snow, extreme temperatures
- Resistant to chemicals
- UV resistant
- Does not cause corrosion
- A wide selection of colors
- TP Neutral is antibacterial.

Item Number	Description	Size
TP 9802	TP SILICON FOR GLASS AND EXTERNAL USE (BLACK)	280 ml Cartridge

TP Neutral Silicone

Usage Area

- For sealing joint of various materials (glass, wood, concrete, stone, ceramics, metal, aluminum, most plastics)
- Not suitable for glazing

Characteristic

sealant Uncured		
Basis		neutral oximic silicone
Form		paste
Curing mechanism		moisture curing
Specific gravity		965±10 kg/m3 (transp.) 1270±10 kg/m3
Skin formation time	23°C/50% rel. humid	7min.
Hardening time	23°C/50% rel. humid	2 mm/day
Resistance to flow	ISO 7390	0 mm
Application temperature		+5°C to +40°C
	Hardened sealant	
Hardness Shore A	ISO 868	15–25
Tensile Strength	ISO 8339	0,40–0,60 MPa
Module E %100	ISO 8339	< 0,4 MPa
Elongation at break	ISO 8339	150–250%
Tensile strength	ISO 37 rod 1	> 1,0 MPa
Elongation at break	ISO 37 rod 1	250–350%
Change in volume	ISO 10563	> 10%
Elastic recovery	ISO 7389	90%
Temperature resistance		-40 °C to +150 °C

Application Details

- The surface of the joint must be dry, clean, dust and fat free. Remove all separated and badly attached pieces.
- If you want joints to look nice tape the edges with masking tape.
- Cut the cartridge at the top and screw on the nozzle, which has to be cut according to the width of the joint and placed in the gun. During work interruption release the handle on the gun and pull the piston back.
- The sealant should be applied as evenly as possible.
- At the end, level the sealant with an appropriate instrument or a well soaped finger.
- Remove the masking tape before the sealant starts to harden.
- Fresh sealant and tools can be cleaned with the cleaner, hardened sealant should be removed mechanically first and then with a cleaner for hardened silicone.

Joint depth (mm)	Joint width (mm)			
	6	8	10	12
6	8.3	6.2	5.0	4.2
8		4.7	3.7	3.1
10			3.0	2.5
12				2.1

The table shows how many linear meters of joints we can seal with one 300 ml cartridge relative to the width and depth of the joint.

Storage

12 months in a dry, cool place under 25°C, in the originally sealed.

Safety precautions

Keep out of the reach of children. Wear suitable gloves. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Use only in well-ventilated areas.

Attention

The information supplied is accurate to the best of our knowledge and is based on reliable tests and practical experiences. Properties quoted are intended, as a guide and do not therefore constitutes a specification. You should thoroughly test any application to be sure that product corresponds to the required performances.

TP SEALPRO-S UNIVERSAL SANITARY SEALANT

Product Description

This is an acetate-based sealant with permanent elasticity and excellent adhesion to most silicate materials (aluminum, ceramics, glass, glazed surfaces, profiled glass, clinker and porcelain). It is also suitable for use in rooms where mold can form. TP SealPro-S is antibacterial.

Item Number	Description	Size*
TP 9800	TP SEALPRO SANITARY (WHITE)	280 ml Cartridge
TP 9801	TP SEALPRO SANITARY (TRANSPARENT)	280 ml Cartridge

**other packaging are available by agreement*

TP SealPro-S
(Universal Sanitary Silicone)

Properties

- It prevents mold to form on silicone due to special admixture.
- Does not slump in vertical joints.
- Excellent adhesion to aluminum, ceramics, glass, glazed surfaces, profiled glass, clinker and porcelain.
- Good mechanical properties.
- Resistant to atmospheric effects, UV-light and ageing.
- Resistant to various chemicals.
- Not suitable for sealing tinned sheet.
- Releases acetic acid during hardening.
- Wide selection of colors.

Usage Area

For sealing joints in rooms where mold can form (bathrooms and basements), for sealing silicate materials and less stressed joints, and for profiled glass mounting.

Characteristic

Basis		Acetic acid silicone
Curing mechanism		By air humidity
Appearance		paste
Specific gravity		940 ± 10 kg/m³
Skin formation time	23°C/50% rel. humid	20min.
Hardening time	23°C/50% rel. humid	3 mm/day
Resistance to flow	ISO 7390	0 mm
Application temperature		+5°C to +40°C
	Cured sealant	
Hardness Shore A	ISO 868	10–20
Tensile Strength	ISO 8339	0,30–0,50 MPa
Module E %100	ISO 8339	< 0.4 MPa
Elongation at break	ISO 8339	150–250%
Tensile strength	ISO 37	> 1,2 MPa
Elongation at break	ISO 37	350%
Change in volume	ISO 10563	> 10%
Temperature resistance		-40 °C to +150 °C

Application Details

Prior to use it is recommended to perform an adhesion test to verify adhesion of the sealant to the substrate.

- The surface of the joint must be dry, hard, clean, dust and fat free. Remove all separated and badly attached pieces.
- If you want joints to look nice tape the edges with a masking tape.
- Cut the cartridge at the top and screw on the nozzle, which has to be cut according to the width of the joint and placed in the gun. During work interruption release the handle on the gun and pull the piston back.
- The sealant should be applied as evenly as possible.
- At the end, use a smoothing tool - smoothing instrument, or a smoothing agent soaped finger to level the sealant before the skin starts to form. It is very important to press the sealant well against the surface to be sealed.
- Remove the masking tape before the sealant starts to harden.
- Admixture against mold formation washes away with water. Anti-mold effect can be extended by drying the joints and aerate the room well.
- Fresh sealant and tools can be cleaned with the cleaner, hardened sealant should be removed mechanically first and then with a cleaner for hardened silicone.

Joint depth (mm)	Joint width (mm)			
	6	8	10	12
6	8.3	6.2	5.0	4.2
8		4.7	3.7	3.1
10			3.0	2.5
12				2.1

The table shows how many linear meters of joints we can seal with one 300 ml cartridge relative to the width and depth of the joint.

Storage

12 months in a dry and cold place under 25°C in originally closed packaging.

WARNING

Instructions contained in this document are based on our research and experience, however, due to specific conditions and working methods we recommend that you perform preliminary tests prior to any application of our products.

CONSUMABLES

HAMMER DRILL BITS

TP Y-Shape Driller SDS-Max Hammer Bits

Item Number	Description	Size*	Working Length (mm)
TP 3201	TP SDS MAX Y-SHAPE	M12x340	200
TP 3202	TP SDS MAX Y-SHAPE	M12x540	400
TP 3203	TP SDS MAX Y-SHAPE	M12x690	550
TP 3204	TP SDS MAX Y-SHAPE	M13x340	200
TP 3205	TP SDS MAX Y-SHAPE	M13x540	400
TP 3206	TP SDS MAX Y-SHAPE	M14x340	200
TP 3207	TP SDS MAX Y-SHAPE	M14x540	400
TP 3208	TP SDS MAX Y-SHAPE	M15x340	200
TP 3209	TP SDS MAX Y-SHAPE	M15x540	400
TP 3210	TP SDS MAX Y-SHAPE	M16x340	200
TP 3211	TP SDS MAX Y-SHAPE	M16x540	400
TP 3212	TP SDS MAX Y-SHAPE	M16x920	800
TP 3213	TP SDS MAX Y-SHAPE	M18x340	200
TP 3214	TP SDS MAX Y-SHAPE	M18x540	400
TP 3215	TP SDS MAX Y-SHAPE	M18x940	800
TP 3216	TP SDS MAX Y-SHAPE	M19X340	200
TP 3217	TP SDS MAX Y-SHAPE	M19X540	400
TP 3218	TP SDS MAX Y-SHAPE	M20x320	200
TP 3219	TP SDS MAX Y-SHAPE	M20x520	400
TP 3220	TP SDS MAX Y-SHAPE	M20x920	800
TP 3221	TP SDS MAX Y-SHAPE	M22x320	200
TP 3222	TP SDS MAX Y-SHAPE	M22x520	400

*(Diameter) x (Length) mm

Item Number	Description	Size*	Working Length (mm)
TP 3223	TP SDS MAX Y-SHAPE	M22x920	800
TP 3224	TP SDS MAX Y-SHAPE	M22x1200	1320
TP 3225	TP SDS MAX Y-SHAPE	M24x320	200
TP 3226	TP SDS MAX Y-SHAPE	M24x520	400
TP 3227	TP SDS MAX Y-SHAPE	M25x320	200
TP 3228	TP SDS MAX Y-SHAPE	M25x520	400
TP 3229	TP SDS MAX Y-SHAPE	M25x920	800
TP 3230	TP SDS MAX Y-SHAPE	M25x1320	1200
TP 3231	TP SDS MAX Y-SHAPE	M26x340	200
TP 3232	TP SDS MAX Y-SHAPE	M26x520	400
TP 3233	TP SDS MAX Y-SHAPE	M28x370	250
TP 3234	TP SDS MAX Y-SHAPE	M28x570	450
TP 3235	TP SDS MAX Y-SHAPE	M28x670	550
TP 3236	TP SDS MAX Y-SHAPE	M30x370	250
TP 3237	TP SDS MAX Y-SHAPE	M30x570	450
TP 3238	TP SDS MAX Y-SHAPE	M32x370	250
TP 3239	TP SDS MAX Y-SHAPE	M32x570	450
TP 3240	TP SDS MAX Y-SHAPE	M32x920	800
TP 3241	TP SDS MAX Y-SHAPE	M32x1320	1200
TP 3242	TP SDS MAX Y-SHAPE	M35x370	250
TP 3243	TP SDS MAX Y-SHAPE	M35x570	450
TP 3244	TP SDS MAX Y-SHAPE	M35x670	550
TP 3245	TP SDS MAX Y-SHAPE	M38x370	250
TP 3246	TP SDS MAX Y-SHAPE	M38x570	450
TP 3247	TP SDS MAX Y-SHAPE	M40x370	250
TP 3248	TP SDS MAX Y-SHAPE	M40x570	450
TP 3249	TP SDS MAX Y-SHAPE	M40x920	800
TP 3250	TP SDS MAX Y-SHAPE	M40x1320	1200
TP 3251	TP SDS MAX Y-SHAPE	M45x570	450
TP 3252	TP SDS MAX Y-SHAPE	M50x570	450

*(Diameter) x (Length) mm

TP Power SDS-Plus Hammer Bits

Item Number	Description	Size*	Working Length (mm)
TP 3001	TP SDS PLUS POWER	M4x110	50
TP 3002	TP SDS PLUS POWER	M4x160	100
TP 3003	TP SDS PLUS POWER	M5x110	50
TP 3004	TP SDS PLUS POWER	M5x160	100
TP 3005	TP SDS PLUS POWER	M5x210	150
TP 3006	TP SDS PLUS POWER	M5.5x110	50
TP 3007	TP SDS PLUS POWER	M5.5x160	100
TP 3008	TP SDS PLUS POWER	M5.5x210	150
TP 3009	TP SDS PLUS POWER	M6x110	50
TP 3010	TP SDS PLUS POWER	M6x160	100
TP 3011	TP SDS PLUS POWER	M6x210	150
TP 3012	TP SDS PLUS POWER	M6x260	200
TP 3013	TP SDS PLUS POWER	M6x360	300
TP 3014	TP SDS PLUS POWER	M6.5x110	50
TP 3015	TP SDS PLUS POWER	M6.5x160	100
TP 3016	TP SDS PLUS POWER	M6.5x210	150
TP 3017	TP SDS PLUS POWER	M6.5x260	200
TP 3018	TP SDS PLUS POWER	M6.5x295	230
TP 3019	TP SDS PLUS POWER	M7x110	50
TP 3020	TP SDS PLUS POWER	M7x160	100
TP 3021	TP SDS PLUS POWER	M7x210	150
TP 3022	TP SDS PLUS POWER	M8x110	50
TP 3023	TP SDS PLUS POWER	M8x160	100
TP 3024	TP SDS PLUS POWER	M8x210	150

*(Diameter) x (Length) mm

Item Number	Description	Size*	Working Length (mm)
TP 3025	TP SDS PLUS POWER	M8x260	200
TP 3026	TP SDS PLUS POWER	M8x310	250
TP 3027	TP SDS PLUS POWER	M8x460	400
TP 3028	TP SDS PLUS POWER	M8x600	550
TP 3029	TP SDS PLUS POWER	M9x160	100
TP 3030	TP SDS PLUS POWER	M9x210	150
TP 3031	TP SDS PLUS POWER	M10x110	50
TP 3032	TP SDS PLUS POWER	M10x160	100
TP 3033	TP SDS PLUS POWER	M10x210	150
TP 3034	TP SDS PLUS POWER	M10x260	200
TP 3035	TP SDS PLUS POWER	M10x310	250
TP 3036	TP SDS PLUS POWER	M10x360	300
TP 3037	TP SDS PLUS POWER	M10x460	400
TP 3038	TP SDS PLUS POWER	M10x600	550
TP 3039	TP SDS PLUS POWER	M10x1000	950
TP 3040	TP SDS PLUS POWER	M11x160	100
TP 3041	TP SDS PLUS POWER	M11x210	150
TP 3042	TP SDS PLUS POWER	M11x260	200
TP 3043	TP SDS PLUS POWER	M11x310	250
TP 3044	TP SDS PLUS POWER	M12x160	100
TP 3045	TP SDS PLUS POWER	M12x210	150
TP 3046	TP SDS PLUS POWER	M12x260	200
TP 3047	TP SDS PLUS POWER	M12x310	250
TP 3048	TP SDS PLUS POWER	M12x450	400

*(Diameter) x (Length) mm

TP Power SDS-Plus Hammer Bits

Item Number	Description	Size*	Working Length (mm)
TP 3049	TP SDS PLUS POWER	M12x600	550
TP 3050	TP SDS PLUS POWER	M12x1000	950
TP 3051	TP SDS PLUS POWER	M12x1350	1400
TP 3052	TP SDS PLUS POWER	M13x160	100
TP 3053	TP SDS PLUS POWER	M13x250	200
TP 3054	TP SDS PLUS POWER	M13x300	250
TP 3055	TP SDS PLUS POWER	M13x450	400
TP 3056	TP SDS PLUS POWER	M14x160	100
TP 3057	TP SDS PLUS POWER	M14x200	150
TP 3058	TP SDS PLUS POWER	M14x250	200
TP 3059	TP SDS PLUS POWER	M14x300	250
TP 3060	TP SDS PLUS POWER	M14x450	400
TP 3061	TP SDS PLUS POWER	M14x600	550
TP 3062	TP SDS PLUS POWER	M14x1000	950
TP 3063	TP SDS PLUS POWER	M15x160	100
TP 3064	TP SDS PLUS POWER	M15x200	150
TP 3065	TP SDS PLUS POWER	M15x250	200
TP 3066	TP SDS PLUS POWER	M15x450	400
TP 3067	TP SDS PLUS POWER	M16x160	100
TP 3068	TP SDS PLUS POWER	M16x200	150
TP 3069	TP SDS PLUS POWER	M16x250	200
TP 3070	TP SDS PLUS POWER	M16x300	250
TP 3071	TP SDS PLUS POWER	M16x450	400
TP 3072	TP SDS PLUS POWER	M16x600	550
TP 3073	TP SDS PLUS POWER	M16x800	750
TP 3074	TP SDS PLUS POWER	M16x1000	950

*(Diameter) x (Length) mm

Item Number	Description	Size*	Working Length (mm)
TP 3075	TP SDS PLUS POWER	M16x1400	1350
TP 3076	TP SDS PLUS POWER	M18x200	150
TP 3077	TP SDS PLUS POWER	M18x250	200
TP 3078	TP SDS PLUS POWER	M18x300	250
TP 3079	TP SDS PLUS POWER	M18x450	400
TP 3080	TP SDS PLUS POWER	M18x600	550
TP 3081	TP SDS PLUS POWER	M18x800	750
TP 3082	TP SDS PLUS POWER	M18x1000	950
TP 3083	TP SDS PLUS POWER	M19x200	150
TP 3084	TP SDS PLUS POWER	M19x450	400
TP 3085	TP SDS PLUS POWER	M20x200	150
TP 3086	TP SDS PLUS POWER	M20x300	250
TP 3087	TP SDS PLUS POWER	M20x450	400
TP 3088	TP SDS PLUS POWER	M20x600	550
TP 3089	TP SDS PLUS POWER	M20x1000	950
TP 3090	TP SDS PLUS POWER	M22x250	200
TP 3091	TP SDS PLUS POWER	M22x450	400
TP 3092	TP SDS PLUS POWER	M22x600	550
TP 3093	TP SDS PLUS POWER	M22x800	750
TP 3094	TP SDS PLUS POWER	M22x1000	950
TP 3095	TP SDS PLUS POWER	M24x250	200
TP 3096	TP SDS PLUS POWER	M24x450	400
TP 3097	TP SDS PLUS POWER	M25x250	200
TP 3098	TP SDS PLUS POWER	M25x300	250
TP 3099	TP SDS PLUS POWER	M25x450	400
TP 3100	TP SDS PLUS POWER	M25x1000	950

*(Diameter) x (Length) mm

TP Super Power SDS-Plus Hammer Bits

Item Number	Description	Size*	Working Length (mm)
TP 3101	TP SDS PLUS SUPER POWER	M5x110	50
TP 3102	TP SDS PLUS SUPER POWER	M5x160	100
TP 3103	TP SDS PLUS SUPER POWER	M5.5x110	50
TP 3104	TP SDS PLUS SUPER POWER	M5.5x160	100
TP 3105	TP SDS PLUS SUPER POWER	M6x110	50
TP 3106	TP SDS PLUS SUPER POWER	M6x160	100
TP 3107	TP SDS PLUS SUPER POWER	M6x210	150
TP 3108	TP SDS PLUS SUPER POWER	M6x260	200
TP 3109	TP SDS PLUS SUPER POWER	M6.5x110	50
TP 3110	TP SDS PLUS SUPER POWER	M6.5x160	100
TP 3111	TP SDS PLUS SUPER POWER	M6.5x210	150
TP 3112	TP SDS PLUS SUPER POWER	M7x160	100
TP 3113	TP SDS PLUS SUPER POWER	M7x210	150
TP 3114	TP SDS PLUS SUPER POWER	M8x110	50
TP 3115	TP SDS PLUS SUPER POWER	M8x160	100
TP 3116	TP SDS PLUS SUPER POWER	M8x210	150
TP 3117	TP SDS PLUS SUPER POWER	M8x260	200
TP 3118	TP SDS PLUS SUPER POWER	M8x310	250
TP 3119	TP SDS PLUS SUPER POWER	M8x450	400
TP 3120	TP SDS PLUS SUPER POWER	M10x110	50
TP 3121	TP SDS PLUS SUPER POWER	M10x160	100
TP 3122	TP SDS PLUS SUPER POWER	M10x210	150

**(Diameter) x (Length) mm*

Item Number	Description	Size*	Working Length (mm)
TP 3123	TP SDS PLUS SUPER POWER	M10x260	200
TP 3124	TP SDS PLUS SUPER POWER	M10/310	250
TP 3125	TP SDS PLUS SUPER POWER	M10x450	400
TP 3126	TP SDS PLUS SUPER POWER	M10x600	550
TP 3127	TP SDS PLUS SUPER POWER	M12x160	100
TP 3128	TP SDS PLUS SUPER POWER	M12x210	150
TP 3129	TP SDS PLUS SUPER POWER	M12x260	200
TP 3130	TP SDS PLUS SUPER POWER	M12x310	250
TP 3131	TP SDS PLUS SUPER POWER	M12x450	400
TP 3132	TP SDS PLUS SUPER POWER	M12x600	550
TP 3133	TP SDS PLUS SUPER POWER	M14x160	100
TP 3134	TP SDS PLUS SUPER POWER	M14x200	150
TP 3135	TP SDS PLUS SUPER POWER	M14x250	200
TP 3136	TP SDS PLUS SUPER POWER	M14x300	250
TP 3137	TP SDS PLUS SUPER POWER	M14x450	400
TP 3138	TP SDS PLUS SUPER POWER	M14x600	550
TP 3139	TP SDS PLUS SUPER POWER	M16x200	150
TP 3140	TP SDS PLUS SUPER POWER	M16x260	200
TP 3141	TP SDS PLUS SUPER POWER	M16x300	250
TP 3142	TP SDS PLUS SUPER POWER	M16x450	400
TP 3143	TP SDS PLUS SUPER POWER	M16x600	550

*(Diameter) x (Length) mm

TP DISCS

Cutting Discs

Item Number	Description	Size	Type
TP2019-I	TP Cutting Disc	100 x 1,0 x 16	INOX
TP2018-I	TP Cutting Disc	100 x 3,2 x 16	METAL
TP2022-I	TP Grinding Disc	100 x 6,4 x 16	METAL
TP2021-I	TP Cutting Disc	115 x 0,8 x 22	INOX
TP2015-I	TP Cutting Disc	115 x 1,0 x 22	INOX
TP2011-I	TP Cutting Disc	115 x 3,2 x 22	METAL
TP2013-I	TP Grinding Disc	115 x 6,4 x 22	METAL
TP2009-I	TP Cutting Disc	180 x 3,2 x 22	METAL
TP2023-I	TP Grinding Disc	180 x 6,5 x 22	METAL
TP2020-I	TP Cutting Disc	230 x 1,9 x 22	INOX
TP2010-I	TP Cutting Disc	230 x 3,2 x 22	METAL
TP2014-I	TP Grinding Disc	230 x 6,5 x 22	METAL
TP2017-I	TP Cutting Disc	350 x 30 x 25	METAL

METAL

INOX

TP CORE BITS

TP Core bits with R =1/2" Connection

Item Number	Description	Size*
TPC 8	TP Core Bit	M8x320
TPC 10	TP Core Bit	M10x320
TPC 12	TP Core Bit	M12x320
TPC 14	TP Core Bit	M14x320
TPC 15	TP Core Bit	M15x320
TPC 16	TP Core Bit	M16x320
TPC 18	TP Core Bit	M18x400
TPC 20	TP Core Bit	M20x400
TPC 22	TP Core Bit	M22x400
TPC 24	TP Core Bit	M24x400
TPC 25	TP Core Bit	M25x400
TPC 26	TP Core Bit	M26x400
TPC 28	TP Core Bit	M28x400
TPC 30	TP Core Bit	M30x400
TPC 32	TP Core Bit	M32x400
TPC 35	TP Core Bit	M35x400
TPC 36	TP Core Bit	M36x400
TPC 38	TP Core Bit	M38x400
TPC 40	TP Core Bit	M40x400
TPC 42	TP Core Bit	M42x400
TPC 50	TP Core Bit	M50x400

**(Diameter) x (Length) mm*

TP CORE BITS

TP Core bits with R = 1 1/4" Connection

Item Number	Description	Size*
TPC 52	TP Core Bit	M52x450
TPC 57	TP Core Bit	M57x450
TPC 62	TP Core Bit	M62x450
TPC 65	TP Core Bit	M65x450
TPC 67	TP Core Bit	M67x450
TPC 72	TP Core Bit	M72x450
TPC 78	TP Core Bit	M78x450
TPC 82	TP Core Bit	M82x450
TPC 92	TP Core Bit	M92x450
TPC 102	TP Core Bit	M102x450
TPC 107	TP Core Bit	M107x450
TPC 112	TP Core Bit	M112x450
TPC 122	TP Core Bit	M122x450
TPC 124	TP Core Bit	M124x450
TPC 125	TP Core Bit	M125x450
TPC 127	TP Core Bit	M127x450
TPC 132	TP Core Bit	M132x450
TPC 142	TP Core Bit	M142x450
TPC 152	TP Core Bit	M152x450
TPC 162	TP Core Bit	M162x450

*(Diameter) x (Length) mm

TP Core bits with R = 1 1/4" Connection

Item Number	Description	Size*
TPC 172	TP Core Bit	M172x450
TPC 182	TP Core Bit	M182x450
TPC 187	TP Core Bit	M187x450
TPC 192	TP Core Bit	M192x450
TPC 200	TP Core Bit	M200x450
TPC 212	TP Core Bit	M212x450
TPC 225	TP Core Bit	M225x450
TPC 232	TP Core Bit	M232x450
TPC 250	TP Core Bit	M250x450
TPC 257	TP Core Bit	M257x450
TPC 300	TP Core Bit	M300x450
TPC 350	TP Core Bit	M350x450
TPC 400	TP Core Bit	M400x450
TPC 450	TP Core Bit	M450x450
TPC 500	TP Core Bit	M500x450
TPC 550	TP Core Bit	M550x450
TPC 600	TP Core Bit	M600x450
TPC 700	TP Core Bit	M700x450
TPC 800	TP Core Bit	M800x450
TPC 1000	TP Core Bit	M1000x450

*(Diameter) x (Length) mm

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