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**European Technical
Assessment**

**ETA-10/0276
of 18/08/2025**

English translation prepared by CSTB - Original version in French language

General Part

Technical Assessment Body issuing the European Technical Assessment:

Centre Scientifique et Technique du Bâtiment (CSTB)

Trade name:

Spatec™ Plus

Product family:

Torque-controlled expansion anchor for use in concrete:
sizes M6, M8, M10, M12 M16 and M20.

Manufacturer:

ITW Australia (Ramset)
1 Ramset Drive
Chirnside Park
VIC 3116
Australia

Manufacturing plants:

Plant 1

This European Technical
Assessment contains:

17 pages including 14 pages of annexes which form an integral
part of this assessment

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

EAD 330232-01-0601 "Mechanical fasteners for use in concrete"

This Assessment replaces:

ETA-10/0276 of 01/09/2015

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Specific Part

1 Technical description of the product

The RAMSET™ Spatec™ Plus anchor is an anchor made of galvanized steel which is placed into a drilled hole and anchored by torque-controlled expansion.

The illustration and the description of the product are given in Annexes A.

2 Specification of the intended use

The performances given in Section 3 are only valid if the anchor is used in compliance with the specifications and conditions given in Annexes B.

The provisions made in this European technical assessment are based on an assumed working life of the anchor of 50 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

3 Performance of the product

3.1 Mechanical resistance and stability (BWR 1)

Essential characteristic	Performance
Characteristic resistance in case of static and quasi-static loading	See Annex C1 and C2
Characteristic resistance in case of seismic performance category C1	See Annex C5
Characteristic resistance in case of seismic performance category C2	See Annex C6
Durability	See Annex C6
Displacements	See Annex B1

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Anchorage satisfy requirements for Class A1
Resistance to fire	See Annex C3 and C4

3.3 Hygiene, health and the environment (BWR 3)

Regarding dangerous substances contained in this European technical approval, there may be requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Construction Products Directive, these requirements need also to be complied with, when and where they apply.

3.4 Safety in use (BWR 4)

For Basic requirement Safety in use the same criteria are valid as for Basic Requirement Mechanical resistance and stability.

3.5 Protection against noise (BWR 5)

Not relevant.

3.6 Energy economy and heat retention (BWR 6)

Not relevant.

3.7 Sustainable use of natural resources (BWR 7)

For the sustainable use of natural resources no performance was determined for this product.

3.8 General aspects relating to fitness for use

Durability and Serviceability are only ensured if the specifications of intended use according to Annex B1 are kept.

4 Assessment and verification of constancy of performance (AVCP)

According to the Decision 96/582/EC of the European Commission¹, as amended, the system of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) given in the following table apply.

Product	Intended use	Level or class	System
Metal anchors for use in concrete	For fixing and/or supporting to concrete, structural elements (which contributes to the stability of the works) or heavy units	—	1

5 Technical details necessary for the implementation of the AVCP system

Technical details necessary for the implementation of the Assessment and verification of constancy of performance (AVCP) system are laid down in the control plan deposited at Centre Scientifique et Technique du Bâtiment.

The manufacturer shall, on the basis of a contract, involve a notified body approved in the field of anchors for issuing the certificate of conformity CE based on the control plan.

The original French version is signed by:

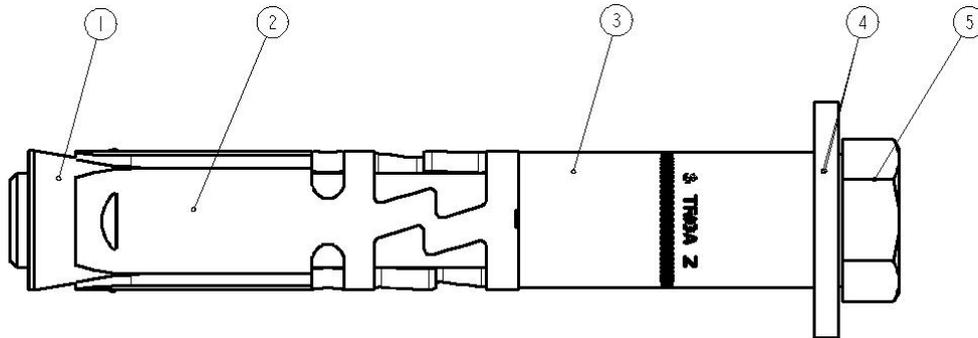
Loïc PAYET

Head of the Structure, Masonry, Partition Division

¹ Official Journal of the European Communities L 254 of 08.10.1996

Installed condition

Figure A1: Assembled anchor:



- 1. cone
- 2. expansion sleeve
- 3. distance sleeve
- 4. washer
- 5. screw (or threaded rod with hexagonal nut or countersunk head)

Marking on the sleeve:

S TRIGA Z
 S : Manufacturer SPIT
 TRIGA Z : Trade name

Table A1: Materials

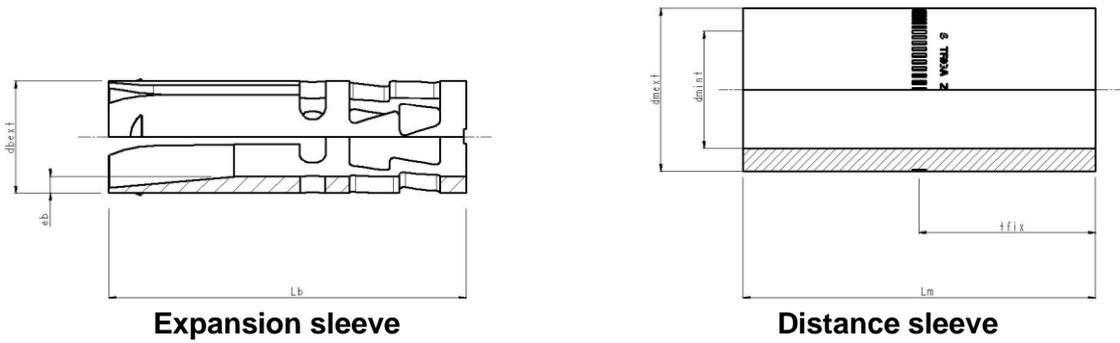
Part	Designation	Material	Coating
1	Cone	1.0765 steel EN 10 087	Galvanised 5 µm
2	Expansion sleeve	1.5530 steel EN 10 149-2	Galvanised 5 µm
3	Distance sleeve	TS 37 a BK or S300Pb NF A 49 341	Galvanised 5 µm
4	Threaded rod	1. Steel Grade 8.8 EN 20 898-1	Galvanised 5 µm
5	Screw	Steel Grade 8.8 EN 20 898-1	Galvanised 5 µm
6	Washer	HLE S550MC	Galvanised 5 µm
7	Hexagonal nut	Grade 8 EN 20 898-2	Galvanised 5 µm

RAMSET™ Spatec™ Plus expansion anchor

Product description
 Parts, Materials

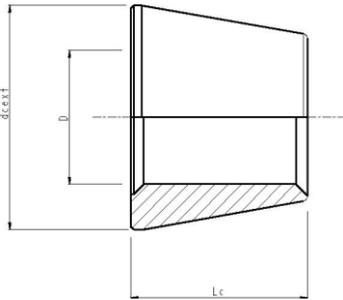
Annex A1

Figure A2: Versions, parts and dimensions of the anchor

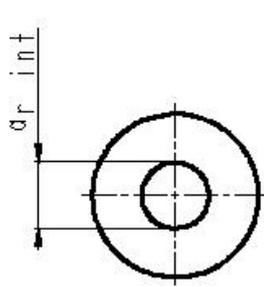


Expansion sleeve

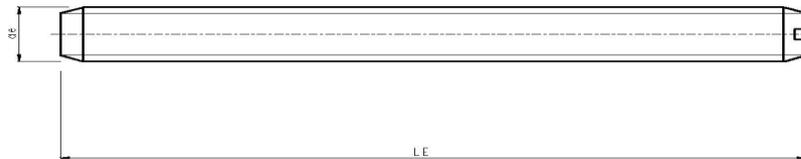
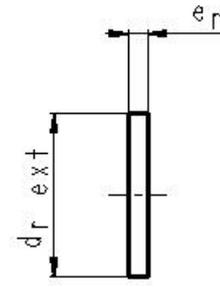
Distance sleeve



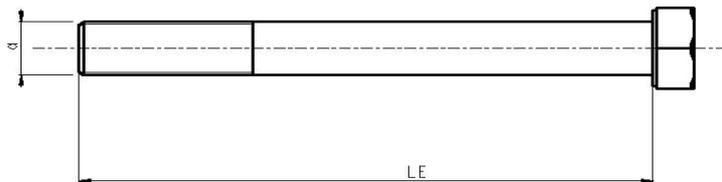
Cone



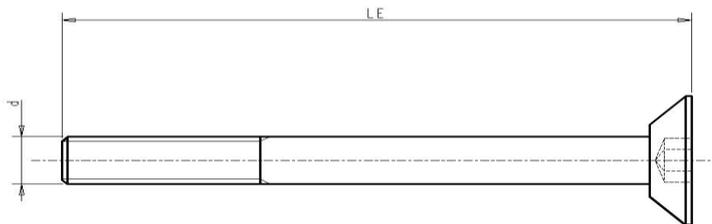
washer



Threaded rod (type E)



Screw (type V)



Countersunk head screw (type TF)

RAMSET™ Spatec™ Plus expansion anchor

Product description
 Parts, dimensions

Annex A2

Table A2: Dimensions

Dimensions of anchor bolt RAMSET™ Spatec™ Plus																	
References		Rod		Washer			Distance sleeve				Expansion sleeve			Cone			
Spatec Plus		LE	d	Er	dr _{ext}	dr _{int}	Lm	dm _{ext}	dm _{int}	t _{fix}	Lb	db _{ext}	eb	Lc	dc	D	
M6	V6-10/5	65	6	2	18	6,7	25	9,5	6,2	5	30	9,5	1,5	8	9,8	6	
	V6-10/20	80					40			20							
	E6-10/50	117					70			20							
M8	V8-12/10	80	8	2	20	8,7	30	11,5	8,2	10	40	11,5	1,5	9,5	11,8	8	
	V8-12/20	90					40			20							
	V8-12/50	80					70			50							
	E8-12/20	99					40			20							
	E8-12/35	114					55			35							
	E8-12/55	134					75			55							
	E8-12/95	174					115			95							
	TF8-12/16	85					30			16							
	TF8-12/26	95					40			26							
M10	V10-15/10	95	10	3	26	10,5	30	14,5	10,2	10	50	14,5	2	10,5	14,8	10	
	V10-15/20	105					40			20							
	V10-15/55	95					75			55							
	E10-15/20	114					40			20							
	E10-15/35	129					55			35							
	E10/15/55	149					75			55							
	E10-15/100	194					120			100							
	TF10-15/27	105					40			27							
	M12	V12-18/10					105			12							3
V12-18/25		120	48	25													
V12-18/55		105	78	55													
E12-18/25		132	48	25													
E12-18/45		152	68	45													
E12-18/65		172	88	65													
E12-18/100		207	123	100													
M16	V16-24/10	130	16	4	40	16,7	35	23	16,5	10	75	23,5	3,5	18,7	23,8	16	
	V16-24/25	145					50			25							
	V16-24/50	145					75			50							
	E16-24/25	159					50			25							
	E16-24/55	189					80			55							
	E16-24/100	234					125			100							
M20	V20-28/25	170	20	4	45	20,7	56	27	20,5	25	94	27,5	3,5	19,6	27,8	20	
	E20-28/25	192					56			25							
	E20-28/60	227					91			60							
	E20-28/100	267					131			100							

RAMSET™ Spatec™ Plus expansion anchor

Product description
Parts, dimensions

Annex A3

Specifications of intended use

Anchorage subject to:

- Static and quasi-static loading: all sizes
- Seismic performance category C1 and C2: sizes M10 to M16,
- Fire exposure: all sizes

Base materials:

- Reinforced or unreinforced normal weight concrete according to EN 206:2013+ A1:2016.
- Strength classes C20/25 to C50/60 according to EN 206:2013+A1:2016.
- Cracked and uncracked concrete.

Use conditions (Environmental conditions):

- Structures subject to dry internal conditions.

Design:

- Anchorages under static or quasi-static loading are designed in accordance with EN 1992-4:2018
- Anchorages under seismic actions (cracked concrete) are designed in accordance with EN 1992-4:2018
- Anchorages shall be positioned outside of critical regions (e.g. plastic hinges) of the concrete structure. Fastenings in stand-off installation or with a grout layer under seismic action are not covered in this European technical assessment (ETA).
- In case of requirements to resistance to fire local spalling of the concrete cover must be avoided.

Installation:

- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- Use of the anchor only as supplied by the manufacturer without exchanging the components of an anchor.
- Anchor installation in accordance with the manufacturer's specifications and drawings and using the appropriate tools.
- Effective anchorage depth, edge distances and spacing not less than the specified values without minus tolerances.
- Hole drilling by hammer drill.
- Cleaning of the hole of drilling dust.
- Application of specified torque moment using a calibrated torque wrench.
- In case of aborted hole, drilling of new hole at a minimum distance of twice the depth of the aborted hole, or smaller distance provided the aborted drill hole is filled with high strength mortar and no shear or oblique tension loads in the direction of aborted hole.
- Drilling technique: hammer drilling
- Use category:
 - dry concrete

RAMSET™ Spatec™ Plus expansion anchor

Intended Use
Specifications

Annex B1

Table B1: Installation parameters

		Embedment depth h_{ef}	Drill hole diameter	Depth of drill hole h_1	Thickness of fixture t_{fix}	Setting torque T_{inst}	Thickness of concrete member	Diameter of clearance hole d_f
		[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
M6	V6-10/5	50	10	70	5	15	100	12
	V6-10/20				20			
	E6-10/50				50			
M8	V8-12/10	60	12	80	1	25	120	14
	V8-12/20				10			
	V8-12/50				50			
	E8-12/20				20			
	E8-12/35				35			
	E8-12/55				55			
	E8-12/95				95			
	TF8-12/16				16			
	TF8-12/26				26			
M10	V10-15/10	70	15	90	10	50	140	17
	V10-15/20				20			
	V10-15/55				55			
	E10-15/20				20			
	E10-15/35				35			
	E10-15/55				55			
	E10-15/100				100			
	TF10-15/27				27			
M12	V12-18/10	80	18	105	10	80	160	20
	V12-18/25				25			
	V12-18/55				55			
	E12-18/25				25			
	E12-18/45				45			
	E12-18/65				65			
E12-18/100	100							
M16	V16-24/10	100	24	131	10	120	200	26
	V16-24/25				25			
	V16-24/50				50			
	E16-24/25				25			
	E16-24/55				55			
	E16-24/100				100			
M20	V20-28/25	125	28	157	25	200	250	31
	E20-28/25				25			
	E20-28/60				60			
	E20-28/100				100			

RAMSET™ Spatec™ Plus expansion anchor

Intended Use
 Installation parameters

Annex B2

Figure B1: Installed anchor

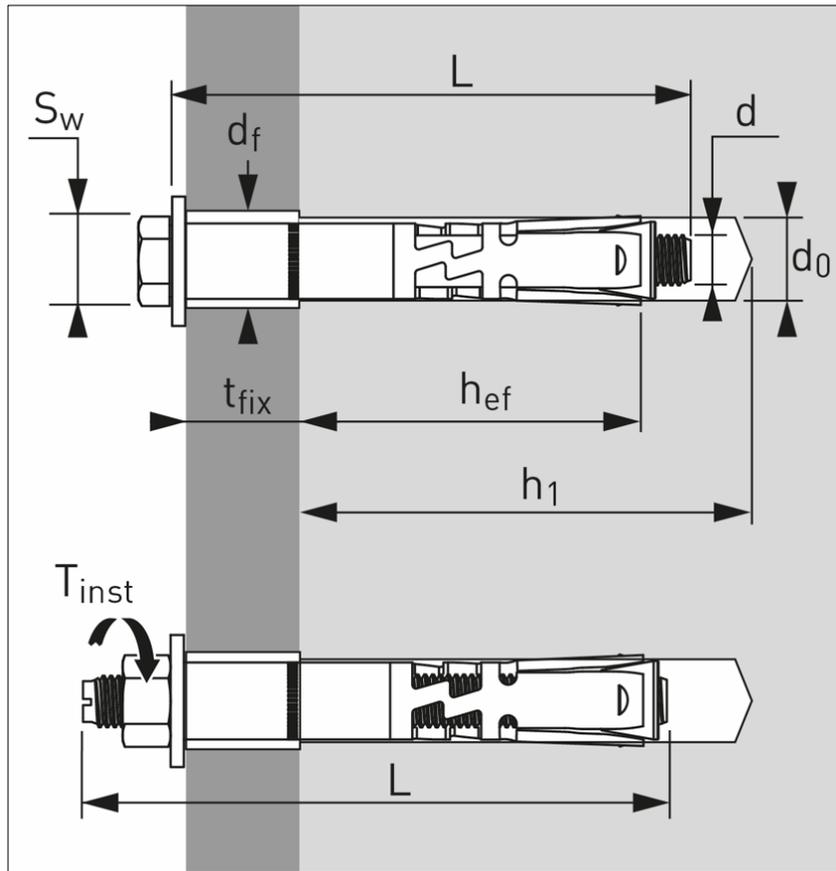


Table B2: Minimum spacing and edge distance, minimum thickness member

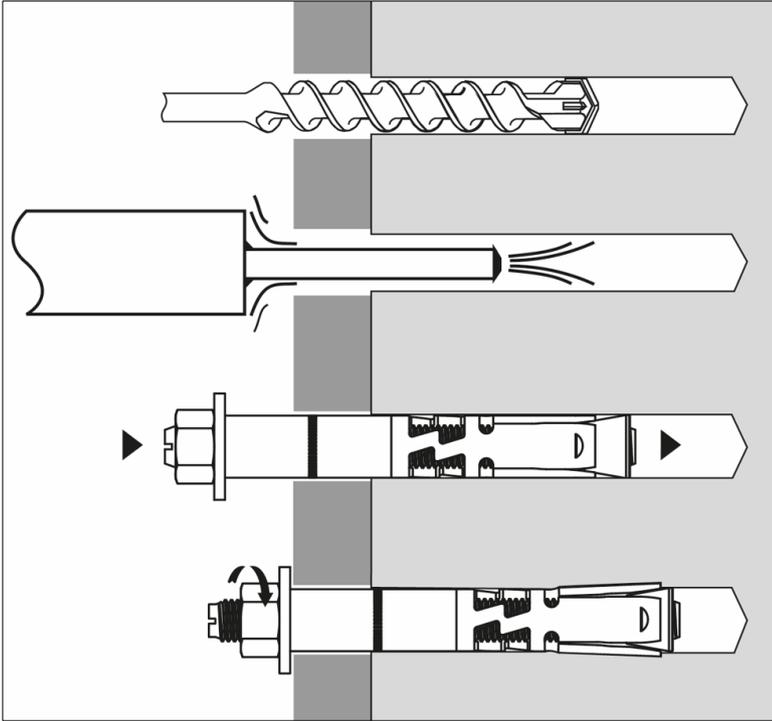
			M6	M8	M10	M12	M16	M20
Min. member thickness	h_{min}	(mm)	100	120	140	160	200	250
Minimum spacing	s_{min}	(mm)	50	60	70	80	100	125
For $c_{min} =$		(mm)	80	100	100	160	180	300
Minimum edge distance	c_{min}	(mm)	50	60	70	80	100	150
For $s_{min} =$		(mm)	100	100	160	200	220	300

RAMSET™ Spatec™ Plus expansion anchor

Intended Use
 Installation parameters

Annex B2

Figure B3: Installation steps



RAMSET™ Spatec™ Plus expansion anchor

Intended Use
Installation instructions

Annex B3

Table C1: Characteristic values of resistance under tension load in case of static and quasi static loading in cracked and uncracked concrete

			M6	M8	M10	M12	M16	M20	
Steel failure									
Characteristic resistance	$N_{Rk,s}$	[kN]	16,1	29,3	46,4	67,4	125,6	196,0	
Partial safety factor	$\gamma_{Ms,N}$	[-]	1,50						
Pull-out failure (cracked and uncracked concrete)									
Characteristic resistance in concrete C20/25	uncracked	$N_{Rk,p,uncr}$	[kN]	17,8	19,8	29,5	36,1	50,4	70,4
	cracked	$N_{Rk,p,cr}$	[kN]	5,0	12,0	16,0	25,8	36,0	50,3
Installation safety factor	γ_{inst}	[-]	1,00						
Increasing factor for $N_{Rk,p}$ for cracked and uncracked concrete $\psi_c = (f_{ck}/20)^{0,5}$	C30/37	ψ_c	[-]	1,22					
	C40/50	ψ_c	[-]	1,41					
	C50/60	ψ_c	[-]	1,58					
Concrete cone failure and splitting (cracked and uncracked concrete)									
Effective embedment depth	h_{ef}	[mm]	50	60	70	80	100	125	
Installation safety factor	γ_{inst}	[-]	1,00						
Factor	$k_{ucr,N}$	[-]	11,0						
	$k_{cr,N}$	[-]	7,7						
Char. spacing	concrete cone failure	$s_{cr,N}$	[mm]	150	180	210	240	300	375
	splitting failure	$s_{cr,sp}$	[mm]	300	300	300	300	380	480
Char. edge distance	concrete cone failure	$c_{cr,N}$	[mm]	75	90	105	120	150	185
	splitting failure	$c_{cr,sp}$	[mm]	150	150	150	150	190	240

RAMSET™ Spatec™ Plus expansion anchor

Performances
 Characteristic resistance under tension load

Annex C1

Table C2: Characteristic values of resistance under shear load in case of static and quasi-static loading

			M6	M8	M10	M12	M16	M20
Steel failure without lever arm								
Screw and countersunk versions – type V and TF								
Char. resistance	$V_{Rk,s}^0$	[kN]	23,4	32,6	49,1	72,7	117,2	173,5
Partial safety factor	$\gamma_{Ms,V}^{1)}$	[-]	1,25					
Ductility factor	k_7	[-]	1,00					
Threaded rod version – type E								
Char. resistance	$V_{Rk,s}^0$	[kN]	14,3	19,0	31,0	47,4	93,1	109,9
Partial safety factor	$\gamma_{Ms,V}^{1)}$	[-]	1,25					
Ductility factor	k_7	[-]	1,00					
Threaded rod only (without distance sleeve)								
Char. resistance	$V_{Rk,s}^0$	[kN]	8,0	14,6	23,2	33,7	62,8	98,0
Partial safety factor	$\gamma_{Ms,V}^{1)}$	[-]	1,25					
Ductility factor	k_7	[-]	1,00					
Steel failure with lever arm								
Char. bending moment	$M_{Rk,s}^0$	[Nm]	12	30	60	105	266	519
Ductility factor	k_7	[-]	1,00					
Installation safety factor	γ_{inst}	[-]	1,25					
Concrete pry-out failure								
Pry-out factor	k_8	[-]	1,0	2,0				
Installation safety factor	γ_{inst}	[-]	1,00					
Concrete edge failure								
Effective length of anchor under shear loading	l_f	[mm]	50	60	70	80	100	125
Outside diameter of anchor	d_{nom}	[mm]	9,5	11,5	14,5	17,5	23,5	27,4
Installation safety factor	γ_{inst}	[-]	1,0					

RAMSET™ Spatec™ Plus expansion anchor

Performances
 Characteristic resistance under shear load

Annex C2

Table C3: Characteristic tension resistance under fire exposure in cracked concrete

			M6	M8	M10	M12	M16	M20
Steel failure								
Characteristic resistance	R30 $N_{Rk,s,fi}$ [kN]		0,9	2,8	4,5	17,6	32,8	51,1
	R60 $N_{Rk,s,fi}$ [kN]		0,6	2,1	3,3	11,4	21,3	33,2
	R90 $N_{Rk,s,fi}$ [kN]		0,4	1,3	2,1	5,3	9,8	15,3
	R120 $N_{Rk,s,fi}$ [kN]		0,3	0,9	1,5	2,2	4,1	6,4
Pullout failure								
Characteristic resistance in concrete \geq C20/25	R30 $N_{Rk,p,fi}$ [kN]		1,2	3,0	4,0	-	-	-
	R60 $N_{Rk,p,fi}$ [kN]		1,2	3,0	4,0	-	-	-
	R90 $N_{Rk,p,fi}$ [kN]		1,2	3,0	4,0	-	-	-
	R120 $N_{Rk,p,fi}$ [kN]		1,0	2,4	3,2	-	-	-
Concrete cone and splitting failure								
Characteristic resistance in concrete \geq C20/25	R30 $N^0_{Rk,c,fi}$ [kN]		3,2	5,0	7,4	10,3	18,0	31,4
	R60 $N^0_{Rk,c,fi}$ [kN]		3,2	5,0	7,4	10,3	18,0	31,4
	R90 $N^0_{Rk,c,fi}$ [kN]		3,2	5,0	7,4	10,3	18,0	31,4
	R120 $N^0_{Rk,c,fi}$ [kN]		2,5	4,0	5,9	8,2	14,4	25,2
Characteristic spacing	$s_{cr,N,fi}$ [mm]		4 x h_{ef}					
Characteristic edge distance	$c_{cr,N,fi}$ [mm]		2 x h_{ef}					

In absence of other national regulations, the partial safety factor for resistance under fire exposure $\gamma_{M,fi} = 1,0$ is recommended

RAMSET™ Spatec™ Plus expansion anchor

Performances

Characteristic tension resistance under fire exposure

Annex C3

Table C4: Characteristic shear resistance under fire exposure in cracked concrete

			M6	M8	M10	M12	M16	M20
Steel failure without lever arm								
Characteristic resistance	R30 $V_{Rk,s,fi}$ [kN]		0,9	2,8	4,5	17,6	32,8	51,1
	R60 $V_{Rk,s,fi}$ [kN]		0,6	2,1	3,3	11,4	21,3	33,2
	R90 $V_{Rk,s,fi}$ [kN]		0,4	1,3	2,1	5,3	9,8	15,3
	R120 $V_{Rk,s,fi}$ [kN]		0,3	0,9	1,5	2,2	4,1	6,4

Steel failure with lever arm								
Characteristic resistance in concrete \geq C20/25	R30 $M^0_{Rk,s,fi}$ [kN]		0,9	2,9	5,8	27,3	69,5	135,5
	R60 $M^0_{Rk,s,fi}$ [kN]		0,6	2,1	4,2	17,8	45,2	88,1
	R90 $M^0_{Rk,s,fi}$ [kN]		0,4	1,3	2,7	8,2	20,9	40,7
	R120 $M^0_{Rk,s,fi}$ [kN]		0,3	0,9	1,9	3,4	8,7	17,0

Concrete pry-out failure								
Pry-out factor	k_8	[-]	1,0	2,0	2,0	2,0	2,0	2,0
Characteristic resistance	R30 $V_{Rk,cp,fi}$ [kN]		3,2	5,0	7,4	10,3	18,0	31,4
	R60 $V_{Rk,cp,fi}$ [kN]		3,2	5,0	7,4	10,3	18,0	31,4
	R90 $V_{Rk,cp,fi}$ [kN]		3,2	5,0	7,4	10,3	18,0	31,4
	R120 $V_{Rk,cp,fi}$ [kN]		2,5	4,0	5,9	8,2	14,4	25,2

Concrete edge failure								
Eff. length of anchor under shear loading	l_f	[mm]	50	60	70	80	100	125
Outside diameter of anchor	d_{nom}	[mm]	6	8	10	12	16	20

In absence of other national regulations, the partial safety factor for resistance under fire exposure $\gamma_{M,fi} = 1,0$ is recommended.

RAMSET™ Spatec™ Plus expansion anchor

Performances
 Characteristic shear resistance under fire exposure

Annex C4

Table C5: Characteristic values of resistance under tension load and shear load in case of seismic category C1

Anchor sizes			M6	M8	M10	M12	M16	M20
Tension load								
Steel failure								
Characteristic resistance	$N_{Rk,s,C1}$	[kN]	-	-	46	67	126	-
Partial safety factor	$\gamma_{Ms,C1}^{1)}$	[-]	-	-	1,0			-
Pull-out failure								
Characteristic resistance	$N_{Rk,p,C1}$	[kN]	-	-	9,2	25,8	36,0	-
Installation safety factor	γ_{inst}	[-]	-	-	1,0			-
Concrete cone failure²⁾								
Installation safety factor	γ_{inst}	[-]	-	-	1,0			-
Factor	$k_{cr,N}$	[-]	-	-	7,7			-
Splitting failure²⁾								
Installation safety factor	γ_{inst}	[-]	-	-	1,0			-
Shear loads: Screw and countersunk versions – type V and TF, Threaded rod version – type E								
Steel failure without lever arm								
Characteristic resistance	$V_{Rk,s,C1}$	[kN]	-	-	17,1	28,4	60,5	-
Partial safety factor	$\gamma_{Ms,C1}^{1)}$	[-]	-	-	1,25			-
Concrete pry-out failure								
Installation safety factor	γ_{inst}	[-]	-	-	1,00			-

¹⁾ In absence of other national regulations

²⁾ For concrete cone failure and splitting failure see EN 1992-4:2018

RAMSET™ Spatec™ Plus expansion anchor

Performances

Characteristic resistance under seismic actions, seismic category C1

Annex C5

Table C6: Characteristic values of resistance under tension load and shear load in case of seismic category C2

Anchor sizes			M6	M8	M10	M12	M16	M20
Tension load								
Steel failure								
Characteristic resistance	$N_{Rk,s,C2}$	[kN]	-	-	46	67	126	-
Partial safety factor	$\gamma_{Ms,C2}$	[-]	-	-	1,0			-
Pull-out failure								
Characteristic resistance	$N_{Rk,p,C2}$	[kN]	-	-	5,3	9,4	16,5	-
Installation safety factor	γ_{inst}	[-]	-	-	1,0			-
Displacement at DLS	$\delta_{N,C2 (DSL)}$	[mm]	-	-	3,76	2,64	6,56	-
Displacement at ULS	$\delta_{N,C2 (ULS)}$	[mm]	-	-	15,87	12,09	17,75	-
Shear loads: Screw and countersunk versions – type V and TF, Threaded rod version – type E								
Steel failure without lever arm								
Characteristic resistance	$V_{Rk,s,C2}$	[kN]	-	-	14,5	28,4	58,1	-
Partial safety factor	$\gamma_{Ms,C2}$	[-]	-	-	1,25			-
Displacement at DLS	$\delta_{V,C2 (DSL)}$	[mm]	-	-	2,41	5,83	6,62	-
Displacement at ULS	$\delta_{V,C2 (ULS)}$	[mm]	-	-	7,48	8,92	11,14	-

RAMSET™ Spatec™ Plus expansion anchor

Performances

Characteristic resistance under seismic actions, seismic category C2

Annex C6

Table C7: Displacements under tension loading

Screw, threaded rod and countersunk head versions		M6	M8	M10	M12	M16	M20
Tension load in uncracked concrete C20/25 [kN]		7,7	9,5	14,1	17,2	24,0	33,5
Displacement	δ_{N0} [mm]	0,1	0,1	0,1	0,1	0,1	0,1
	$\delta_{N\infty}$ [mm]	0,1	0,1	0,1	0,1	0,1	0,1
Tension load in uncracked concrete C50/60 [kN]		7,7	13,9	21,8	26,6	37,2	51,9
Displacement	δ_{N0} [mm]	0,1	0,2	0,4	0,5	0,8	1,2
	$\delta_{N\infty}$ [mm]	0,1	0,2	0,4	0,5	0,8	1,2
Tension load in cracked concrete C20/25 [kN]		2,4	5,7	7,6	12,3	17,1	23,9
Displacement	δ_{N0} [mm]	0,6	0,6	0,6	0,7	0,7	0,8
	$\delta_{N\infty}$ [mm]	0,6	0,6	0,7	0,7	1,0	1,0
Tension load in cracked concrete C50/60 [kN]		3,7	8,9	11,8	19,0	26,6	37,1
Displacement	δ_{N0} [mm]	0,7	0,9	1,1	1,3	1,7	2,2
	$\delta_{N\infty}$ [mm]	0,7	0,9	1,1	1,3	1,7	2,2

Table C8: Displacements under shear loads

Screw and countersunk head versions		M6	M8	M10	M12	M16	M20
Shear load in cracked and uncracked concrete C20/25 to C50/60 [kN]		13,4	18,6	28,1	41,5	67,0	99,1
Displacement	δ_{V0} [mm]	6,0	6,4	6,9	7,4	8,3	9,4
	$\delta_{V\infty}$ [mm]	9,0	9,7	10,4	11,0	12,4	14,1

Threaded rod versions		M6	M8	M10	M12	M16	M20
Shear load in cracked and uncracked concrete C20/25 to C50/60 [kN]		8,2	10,9	17,7	27,1	53,2	62,8
Displacement	δ_{V0} [mm]	4,5	4,8	5,0	5,3	5,8	6,5
	$\delta_{V\infty}$ [mm]	6,7	7,1	7,5	7,9	8,8	9,8

Additional displacement due to anular gap between anchor and fixture has to be taken into account.

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Displacements

Annex C7