

Approval body for construction products
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and
Laender Governments



European Technical Assessment

ETA-06/0268
of 27 February 2018

English translation prepared by DIBt - Original version in German language

General Part

Technical Assessment Body issuing the
European Technical Assessment:

Deutsches Institut für Bautechnik

Trade name of the construction product

SPIT GRIP A4/HCR

Product family
to which the construction product belongs

Deformation-controlled expansion anchor
for use in non-cracked concrete

Manufacturer

SPIT
Route de Lyon
26500 BOURG-LÉS-VALENCE
FRANKREICH

Manufacturing plant

Manufacturing plant 6

This European Technical Assessment
contains

14 pages including 3 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 330232-00-0601

European Technical Assessment

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Specific Part**1 Technical description of the product**

The SPIT GRIP A4/HCR is an anchor made of stainless steel or high corrosion resistant steel which is placed into a drilled hole and anchored by deformation-controlled expansion.

The product description is given in Annex A.

2 Specification of the intended use in accordance with the applicable European Assessment Document

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

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the anchor of at least 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 and references to the methods used for its assessment**3.1 Mechanical resistance and stability (BWR 1)**

Essential characteristic	Performance
Characteristic resistance for tension and shear loads in concrete	See Annex C 1 to C 2
Displacements under tension and shear loads	See Annex C 3

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Anchorage satisfy requirements for Class A1
Resistance to fire	No performance assessed

4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

In accordance with European Assessment Documents EAD No. 330232-00-0601 the applicable European legal act is: [96/582/EC].

The system to be applied is: 1

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable European Assessment Document

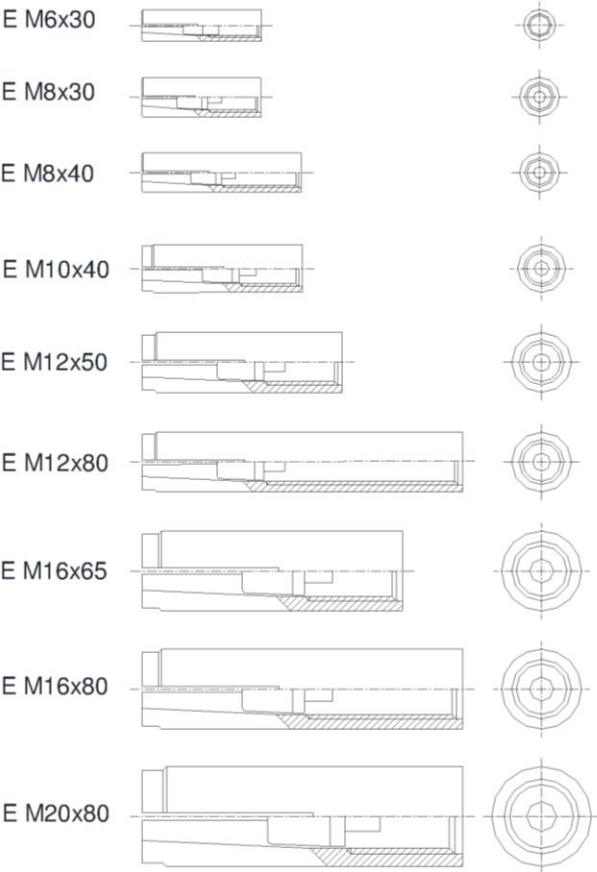
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 27 February 2018 by Deutsches Institut für Bautechnik

Dr.-Ing. Lars Eckfeldt
p.p. Head of Department

beglaubigt:
Baderschneider

Anchor size



SPIT GRIP A4/HCR

Product description
Anchor size

Annex A1

Installation situation

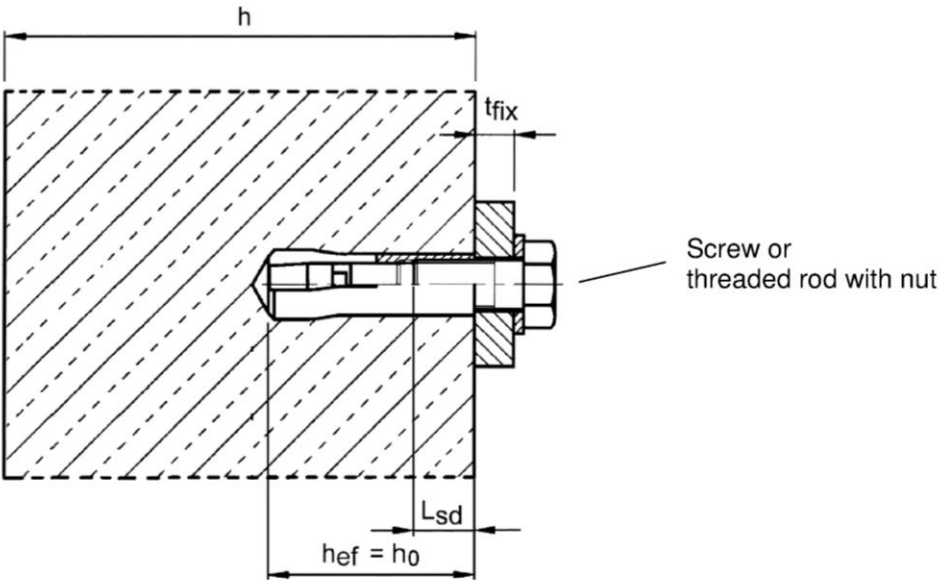


Table A1: Designations of anchor parts and material

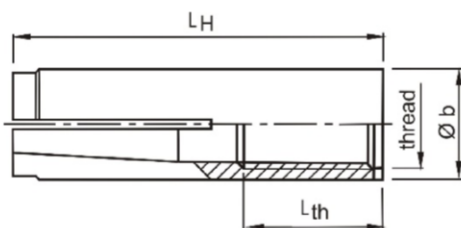
Part	Designation	Stainless steel A4	High corrosion resistant steel HCR
1	Anchor sleeve	Stainless steel, 1.4401, 1.4404, 1.4571, 1.4362, EN 10088:2005, Property class 70, acc. to EN ISO 3506:2010	Stainless steel, 1.4529, 1.4565, EN 10088:2005, Property class 70, acc. to EN ISO 3506:2010
2	Cone	Stainless steel, 1.4401, 1.4404, 1.4571, 1.4362, EN 10088:2005	

SPIT GRIP A4/HCR

Product description
Installation situation and material

Annex A2

Anchor sleeve

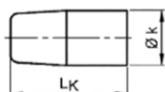


Marking: see Table A2

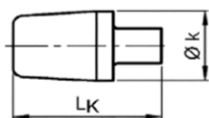
e.g.: \diamond E M8x40

\diamond Identifying mark of manufacturing plant
E Anchor identity
M8 Size of thread
40 Anchorage depth
A4 additional marking of stainless steel A4
HCR additional marking of high corrosion resistant steel

Cone



Size M6x30 and M10x30



Size M8x30 – M20x80

Table A2: Dimensions and marking

	Anchor sleeve				Cone		Marking	
Anchor size	thread	Ø b	L_H	L_{th}	Ø k	L_K	version E	alternatively
M6x30	M6	8	30	13	5,0	13	\diamond E M6x30	\diamond E M6
M8x30	M8	10	30	13	6,5	12	\diamond E M8x30	\diamond E M8
M8x40	M8	10	40	20			\diamond E M8x40	\diamond E M8x40
M10x30	M10	12	30	12	8,2	12	-	\diamond E M10x30
M10x40	M10	12	40	15	8,2	16	\diamond E M10x40	\diamond E M10
M12x50	M12	15	50	18	10,3	20	\diamond E M12x50	\diamond E M12
M12x80	M12	15	80	45			\diamond E M12x80	\diamond E M12x80
M16x65	M16	19,7	65	23	13,8	29	\diamond E M16x65	\diamond E M16
M16x80	M16	19,7	80	38			\diamond E M16x80	\diamond E M16x80
M20x80	M20	24,7	80	34	16,5	30	\diamond E M20x80	\diamond E M20

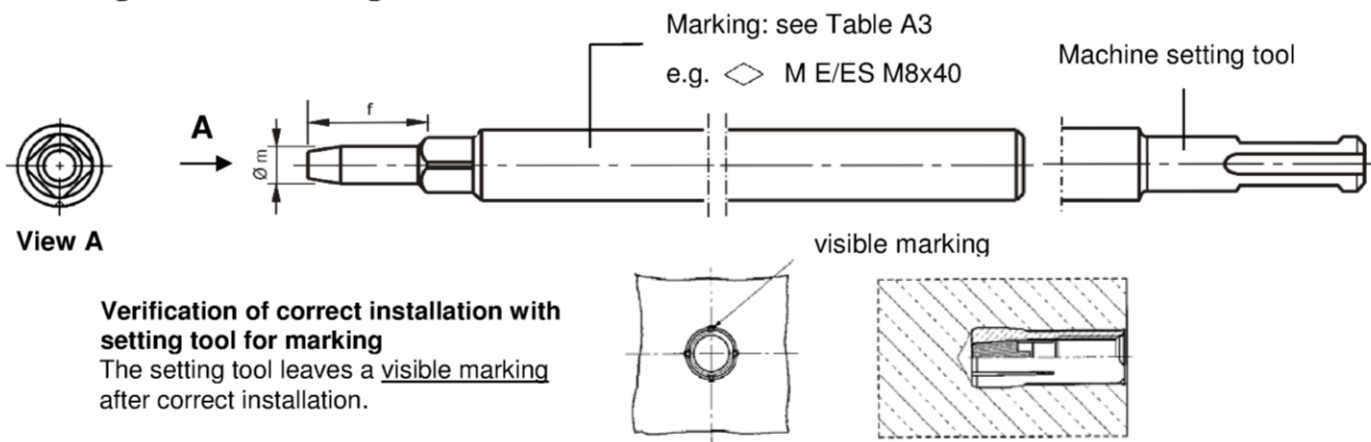
Dimensions in mm

SPIT GRIP A4/HCR

Product description
Dimensions and marking

Annex A3

Setting tool for marking



Setting tool

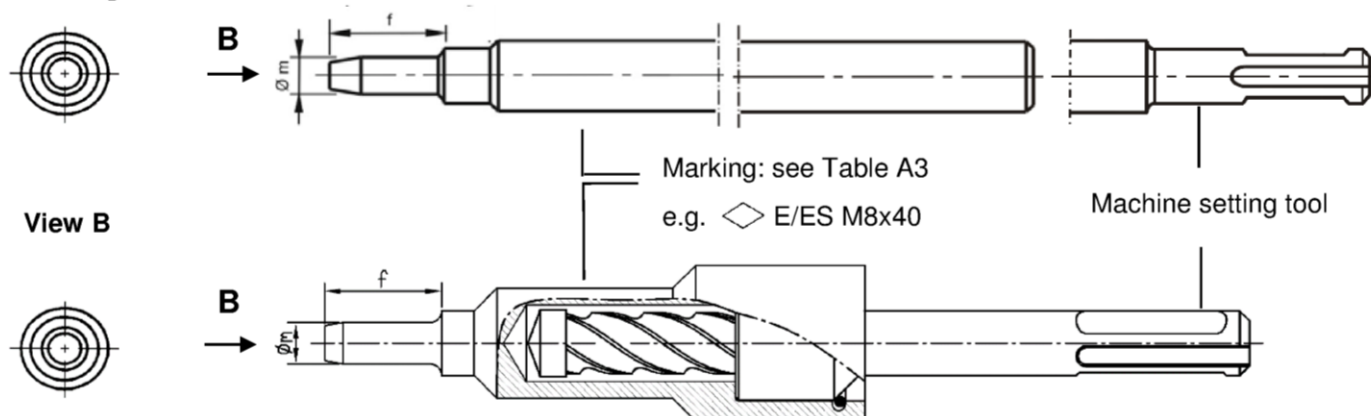


Table A3: Dimensions and marking of setting tools

Anchor size	Ø m	f	Setting tool for marking		Setting tool	
			Marking	Alternative marking	Marking	Alternative marking
M6x30	4,9	17	◇ M E/ES M6x30	◇ M E M6	◇ E/ES M6x30	◇ E M6
M8x30	6,4	18	◇ M E/ES M8x30	◇ M E M8	◇ E/ES M8x30	◇ E M8
M8x40	6,4	28	◇ M E/ES M8x40	◇ M E M8x40	◇ E/ES M8x40	◇ E M8x40
M10x40	8,0	24	◇ M E/ES M10x40	◇ M E M10	◇ E/ES M10x40	◇ E M10
M12x50	10,0	30	◇ M E/ES M12x50	◇ M E M12	◇ E/ES M12x50	◇ E M12
M12x80	10,0	60	◇ M E/ES M12x80	◇ M E M12x80	◇ E/ES M12x80	◇ E M12x80
M16x65	13,5	36	◇ M E/ES M16x65	◇ M E M16	◇ E/ES M16x65	◇ E M16
M16x80	13,5	51	◇ M E/ES M16x80	◇ M E M16x80	◇ E/ES M16x80	◇ E M16x80
M20x80	16,5	50	◇ M E M20x80	◇ M E M20	◇ E M20x80	◇ E M20

Dimensions in mm

SPIT GRIP A4/HCR

Product description
Setting tools, dimensions and marking

Annex A4

Specifications of intended use

Anchorage subject to:

- Static and quasi-static loads

Base materials:

- Reinforced or unreinforced normal weight concrete according to EN 206-1:2000
- Non-cracked concrete
- Strength classes C20/25 to C50/60 according to EN 206-1:2000

Use conditions:

- Structures subject to dry internal conditions (zinc plated steel, stainless steel or high corrosion resistant steel).
- Structures subject to external atmospheric exposure including industrial and marine environment or exposure to permanently damp internal condition, if no particular aggressive conditions exist (stainless steel or high corrosion resistant steel).
- Structures subject to external atmospheric exposure and to permanently damp internal condition, if other particular aggressive conditions (high corrosion resistant steel).

Note: Particular aggressive conditions are e.g. permanent, alternating immersion in seawater or the splash zone of seawater, chloride atmosphere of indoor pools or atmosphere with extreme chemical pollution (e.g. in desulphurization plants or road tunnels where de-icing materials are used.)

Design:

- Anchorages are designed under the responsibility of an engineer experienced in anchorages and concrete work.
- Verifiable calculation notes and drawings are prepared taking account of the loads to be anchored. The position of the anchor is indicated on the design drawings (e.g. position of the anchor relative to reinforcement or to supports, etc.).
- The strength class and the length of the fastening screw or threaded rod shall be defined by the designing engineer
- Design of fastenings in accordance to FprEN 1992-4:2016 and EOTA Technical Report TR 055.

Installation:

- Anchor installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site,
- Anchor installation in accordance with the manufacturer's specifications and drawings and using the appropriate tools,
- Drill hole by hammer drilling only,
- Positioning of the drill holes without damaging the reinforcement.

SPIT GRIP A4/HCR

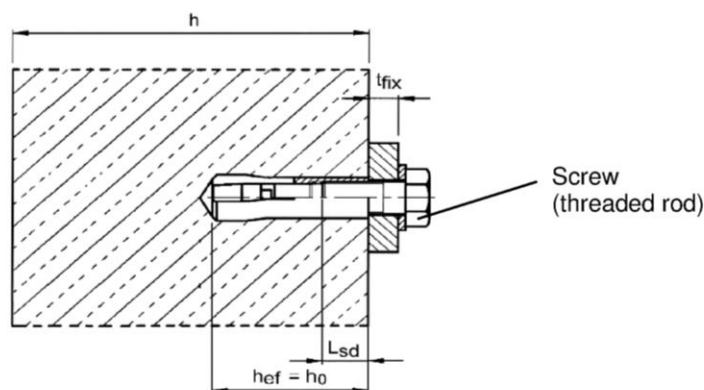
Intended use
Specifications

Annex B1

Table B1: Installation parameters

Anchor size		M6x30	M8x30	M8x40	M10x30	M10x40	M12x50	M12x80	M16x65	M16x80	M20x80
Depth of drill hole	$h_0 =$ [mm]	30	30	40	30	40	50	80	65	80	80
Drill hole diameter	$d_0 =$ [mm]	8	10	10	12	12	15	15	20	20	25
Cutting diameter of drill bit	$d_{cut} \leq$ [mm]	8,45	10,45	10,45	12,5	12,5	15,5	15,5	20,55	20,55	25,55
Max. installation torque ¹⁾	$T_{inst} \leq$ [Nm]	4	8	8	15	15	35	35	60	60	120
Diameter of clearance hole in the fixture	$d_f \leq$ [mm]	7	9	9	12	12	14	14	18	18	22
Available thread length	L_{th} [mm]	13	13	20	12	15	18	45	23	38	34
Minimum screw-in depth	L_{sdmin} [mm]	7	9	9	10	11	13	13	18	18	22
Minimum thickness of member	h_{min} [mm]	100	100	100	-	130	140	140	160	160	250
Minimum spacing	s_{min} [mm]	50	60	80	-	100	120	120	150	150	160
Minimum edge distance	c_{min} [mm]	80	95	95	-	135	165	165	200	200	260

¹⁾ If the screw or threaded rod is otherwise secured against unscrewing, the torque can be omitted.



Requirements of the fastening screw or the threaded rod and nut according to the engineering documents:

- Minimum screw-in depth L_{sdmin} see Table B1
- The length of screw or the threaded rod shall be determined depending on the thickness of fixture t_{fix} , available thread length L_{th} (= maximum screw-in depth) and the minimum screw-in depth L_{sdmin} .
- $A_5 > 8\%$ ductility

Stainless steel A4

- Material 1.4401; 1.4404; 1.4578; 1.4571; 1.4439; 1.4362 EN 10088:2005
- Property class 70 or 80 according to EN ISO 3506:2010

High corrosion resistant steel (HCR)

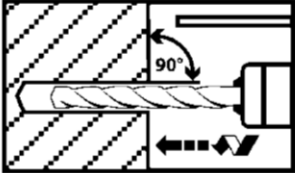
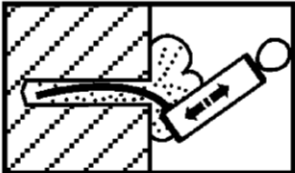
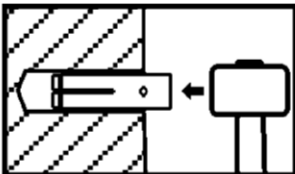
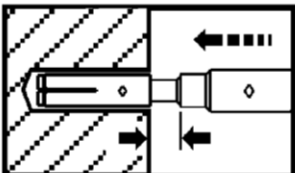
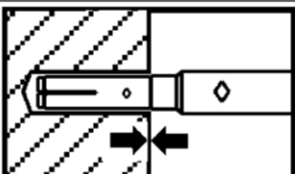
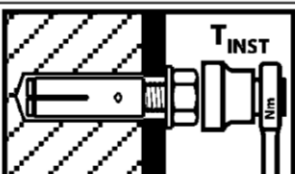
- Material 1.4529; 1.4565 acc. to EN 10088:2005
- Property class 70 or 80 acc. to EN ISO 3506:2010

SPIT GRIP A4/HCR

Intended use
Installation parameters

Annex B2

Installation instructions

1		Drill hole perpendicular to concrete surface.
2		Blow out dust.
3		Drive in anchor.
4		Drive in cone by using setting tool.
5		Shoulder of setting tool must fit on anchor rim.
6		Apply installation torque T_{inst} by using calibrated torque wrench.

SPIT GRIP A4/HCR

Intended use
Installation instructions

Annex B3

Table C1: Characteristic values for **tension loads**

Anchor size			M6x30 ¹⁾	M8x30 ¹⁾	M8x40	M10x40	M12x50 M12x80	M16x65 M16x80	M20x80	
Installation safety factor		γ_{inst}	[-]	1,0						
Steel failure										
Characteristic resistance (property class 70)		$N_{Rk,s}$	[kN]	14,1	23,3	29,4	50,2	83,8	133,0	
Characteristic resistance (property class 80)		$N_{Rk,s}$	[kN]	17,5	23,3	29,4	50,2	83,8	133,0	
Partial safety factor		γ_{Ms}	[-]	1,87						
Pull-out failure										
Characteristic resistance in concrete C20/25		$N_{Rk,p}$	[kN]	2)	2)	9	2)	2)	2)	
Splitting failure										
Characteristic resistance in concrete C20/25		$N^0_{Rk,sp}$	[kN]	8,1	8,1	9,0	12,4	17,4	25,8	35,2
Edge distance		$c_{Cr,sp}$	[mm]	80	95	95	135	165	200	260
Increasing factor for $N_{Rk,p}$ and $N^0_{Rk,sp}$		ψ/C	[-]	$\left(\frac{f_{ck}}{20}\right)^{0,5}$						
Concrete cone failure										
Effective anchorage depth		h_{ef}	[mm]	30 ³⁾	30	40	40	50	65	80
Edge distance		$c_{Cr,N}$	[mm]	1,5 h_{ef}						
Factor for k_1		$k_{ucr,N}$	[-]	11,0						

¹⁾ Use restricted to anchoring of structural components statically indeterminate

²⁾ Pull-out is not decisive.

SPIT GRIP A4/HCR

Performance
Characteristic values for **tension loads**

Annex C1

Table C2: Characteristic values for **shear loads**

Anchor size			M6x30 ¹⁾	M8x30 ¹⁾	M8x40	M10x40	M12x50 M12x80	M16x65 M16x80	M20x80
Steel failure without lever arm									
Characteristic resistance (property class 70)	V _{Rk,s}	[kN]	7,0	10,6		13,4	25,1	41,9	66,5
Characteristic resistance (property class 80)	V _{Rk,s}	[kN]	8,7	10,6		13,4	25,1	41,9	66,5
Partial safety factor	γ _{Ms}	[-]	1,56						
Factor of ductility	k ₇	[-]	1,0						
Steel failure with lever arm									
Characteristic resistance (property class 70)	M ⁰ _{Rk,s}	[Nm]	11	26		52	92	233	454
Partial safety factor	γ _{Ms}	[-]	1,56						
Characteristic resistance (property class 80)	M ⁰ _{Rk,s}	[Nm]	12	30		60	105	266	519
Partial safety factor	γ _{Ms}	[-]	1,33						
Factor of ductility	k ₇	[-]	1,0						
Concrete pry-out failure									
Factor	k ₈	[-]	1,0	1,7		1,7		2,0	
Concrete edge failure									
Effective length of anchor under shear loading	l _f	[mm]	30	30	40	40	50	65	80
Outside diameter of anchor	d _{nom}	[mm]	8	10	10	12	15	20	25

¹⁾ Use restricted to anchoring of structural components statically indeterminate

SPIT GRIP A4/HCR

Performance
Characteristic values for **shear loads**

Annex C2

Table C3: Displacements under tension loads

Anchor size			M6x30	M8x30	M8x40	M10x40	M12x50 M12x80	M16x65 M16x80	M20x80
Tension load in non-cracked concrete	N	[kN]	4	4	4,3	6,1	8,5	12,6	17,2
Displacement	δ_{N0}	[mm]	0,12						
	$\delta_{N\infty}$	[mm]	0,24						

Table C4: Displacements under shear loads

Anchor size			M6x30	M8x30	M8x40	M10x40	M12x50 M12x80	M16x65 M16x80	M20x80
Shear load in non-cracked concrete	V	[kN]	3,5	5,2	5,2	6,5	11,5	19,2	30,4
Displacement	δ_{V0}	[mm]	1,9	1,1	0,7	1,0	1,7	2,4	2,6
	$\delta_{V\infty}$	[mm]	2,8	1,6	1,0	1,5	2,6	3,6	3,8

SPIT GRIP A4/HCR

Performance
Displacements

Annex C3