



Designated according to The Construction Products (Amendment etc.) (EU Exit) Regulations 2020

UK Technical Assessment	UKTA-0836-22/6204-of 11/11/2022
Technical Assessment Body issuing the UK Technical Assessment:	British Board of Agrément
Trade name of the construction product:	Rawl R-XPTII-A4 Anchor
Product family to which the construction product belongs:	Area Code: 33 Torque controlled expansion anchor for use in uncracked concrete
Manufacturer:	Rawlplug S.A. Ul. Kwidzyńska 6 51-416 Wrocław Poland
Manufacturing plant(s):	Manufacturing Plant No. 2
This UK Technical Assessment contains:	13 pages including 8 annexes which form an integral part of this assessment
This UK Technical Assessment is issued in accordance with The Construction Products (Amendment etc.) (EU Exit) Regulations 2020 on the basis of:	UKAD 330232-00-0601 "Mechanical fasteners for use in concrete"

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1. Technical description of the product

The Rawl R-XPTII-A4 Anchor are through-fixing torque-controlled expansion anchors in the following sizes: M8, M10, M12 and M16. Each type comprises a special bolt with a taper, an expansion sleeve, a hexagonal nut and a washer. The anchors are made from A4 grade stainless steel.

The anchor is installed in a drilled hole; tightening the nut draws the cone into the sleeve. The expansion of this sleeve applies the anchorage.

The installed anchor is shown in Annex 1.

2. Specification of the intended use(s) in accordance with the applicable UK Assessment Document (hereinafter UKAD)

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 provisions made in this UK 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 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 (static and quasi-static loading)	See Annex C 1 and C 2
Displacement	See Annex C 1 and C 2

3.2. Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A1 according to EN 13501-1
Resistance to fire	No performance assessed

3.3. Health, hygiene and the environment (BWR 3)

Not relevant.

3.4. Safety and accessibility in use (BWR 4)

Not relevant.

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)

No performance assessed.

4. Assessment and verification of constancy of performance (hereinafter AVCP) system applied

4.1. System of assessment and verification of constancy of performance

According to UKAD No. 330232-00-0601 and Annex V of the Construction Products Regulation (Regulation (EU) 305/2011 as brought into UK law and amended, the system of assessment and verification of constancy of performance (AVCP) 1 applies.

5. Technical details necessary for the implementation of the AVCP system, as provided for in the applicable UKAD

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with the British Board of Agrément and made available to the UK Approved Bodies involved in the conformity attestation process.

5.1. UKCA marking for the product/ system must contain the following information:

- Identification number of the Approved Body
- Name/address of the manufacturer of the product/ system
- Marking with intention of clarification of intended use
- Date of marking
- Number of certificate of constancy of performance
- UKTA number.

On behalf of the British Board of Agrément



Date of Issue: 11 November 2022

Hardy Giesler
Chief Executive

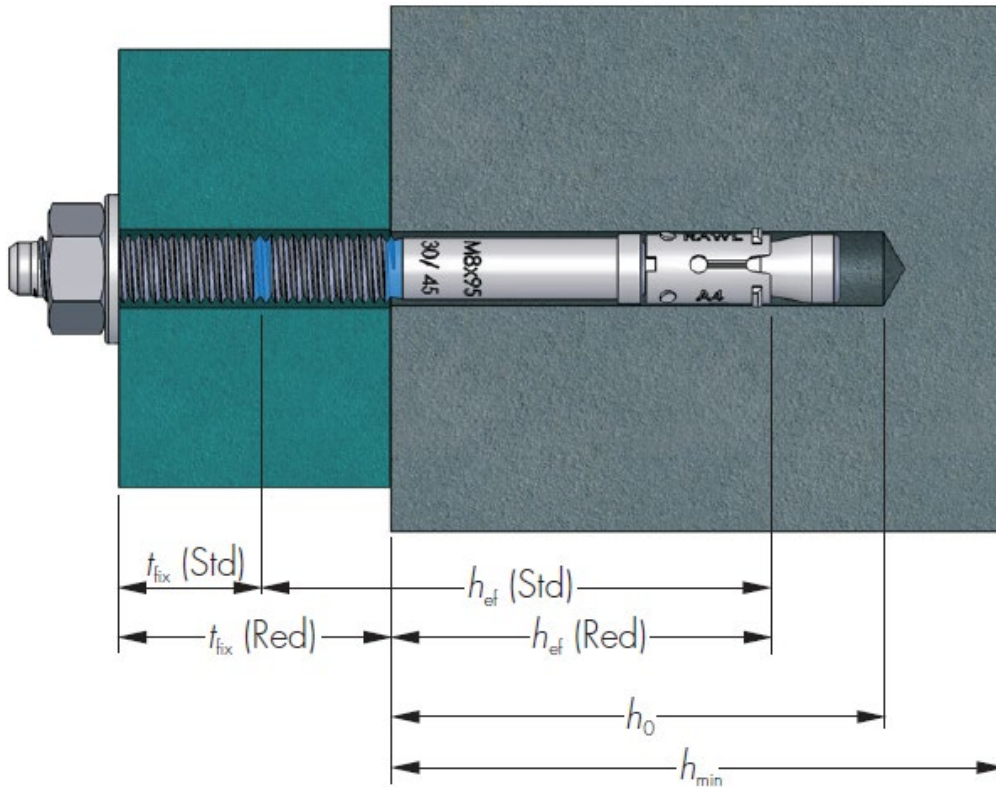


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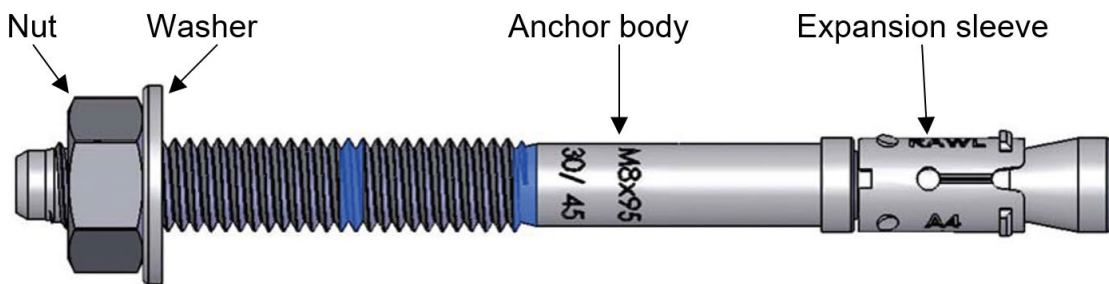
ANNEXES

These annexes apply to the product described in the main body of the UK Technical Assessment.

Rawl R-XPTII-A4 Anchor - Installed anchor



Rawl R-XPTII-A4 Anchor - components



Rawl R-XPTII-A4 Anchor

Product description
Installed conditions and components

Annex A 1

Table A1 - Materials

Component	Material
Anchor body	Steel rod on coil cold forged bolts Steel grade 1.4578, EN 10263-5
Expansion sleeve	Steel grade 1.4401, EN 10088-2
Hexagonal nut	Steel grade A4, class 70 or 80, ISO 3506-2
Washer	according to DIN 125A or DIN 9021

Table A2 – Material properties

Component		M8 – M10	M12-M16
Anchor body – ultimate tensile strength	[N/mm ²]	600-700	550-650
		M8-M16	
Expansion sleeve – ultimate tensile strength	[N/mm ²]	530-680	

Table A3 – Marking

M8																		
Bolt length [mm]	60	65	75	80	85	90	95	100	105	115	120	140	150	160				
Head marking	B	b	C	d	D	e	E	F	f	G	H	K	L	M				
Bolt marking	-/10	-/15	10/25	15/30	20/35	25/40	30/45	35/50	40/55	50/65	55/70	75/90	85/100	95/110				
M10																		
Bolt length [mm]	65	80	85	90	95	115	120	130	140	150	180							
Head marking	B	D	d	e	E	G	H	J	K	L	P							
Bolt marking	-/5	-/20	5/25	10/30	15/35	35/55	40/60	50/70	60/80	70/90	100/120							
M12																		
Bolt length [mm]	80	100	105	110	115	120	125	135	140	150	160	180	200	220	240	250	260	280
Head marking	D	F	f	G	g	h	H	J	K	L	M	P	R	S	T	U	V	X
Bolt marking	-/5	5/25	10/30	15/35	20/40	25/45	30/50	40/60	45/65	55/75	65/85	85/105	105/125	125/145	145/165	155/175	165/185	185/205
M16																		
Bolt length [mm]	100	105	125	130	140	150	160	180	200	220	250	280	300					
Head marking	F	f	H	J	K	L	M	P	R	S	U	X	Y					
Bolt marking	-/5	-/10	5/25	10/30	20/40	30/50	40/60	60/80	80/100	100/120	130/150	160/180	180/200					

Rawl R-XPTII-A4 Anchor

Product description
Materials and marking

Annex A 2

Specifications of intended use

Anchorage subject to:

- Static and quasi-static load.

Base materials

- Uncracked concrete.
- Reinforced or unreinforced normal weight concrete of strength class C20/25 at minimum and C50/60 at maximum according to EN 206:2013.

Use conditions (Environmental conditions)

- Structures subject to dry internal conditions.
- Structures subject to external atmospheric exposure (including industrial and marine environment) or exposure to permanently damp internal condition, if no particular aggressive conditions exist.

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

Design:

- The anchorages are designed in accordance with the EN 1992-4:2018 and EOTA Technical Report TR 055, December 2016 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.

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 any components of the anchor.
- Anchor installation in accordance with the manufacturer's specifications and drawings using the appropriate tools.
- Effective anchoring depth, edge distance and spacing not less than the specified values without minus tolerance.
- In cases of aborted drill holes: new drilling at a minimum distance away of twice the depth of the aborted hole or smaller distance if the aborted drill hole is filled with high strength mortar and, if under shear or oblique tension load, it is not in the direction of load application.

Rawl R-XPTII-A4 Anchor

Intended Use
Specifications

Annex B 1

Table B1 - Installation parameters

Size	Drill hole diameter d_0 [mm]	Bolt length l [mm]	Thread length l_G [mm]	Hole diameter in fixture d_f [mm]	Standard embedment				Reduced embedment				Installation torque T_{inst} [N.m]
					Min. hole depth h_0 [mm]	Nominal embedment depth h_{nom} [mm]	Effective embedment depth h_{ef} [mm]	Max. fixture thickness t_{fx} [mm]	Min. hole depth h_0 [mm]	Nominal embedment depth h_{nom} [mm]	Effective embedment depth h_{ef} [mm]	Max. fixture thickness t_{fx} [mm]	
M8	8	60	25	9	-	-	-	-	50	40	32	10	15
		65	30	9	-	-	-	-	50	40	32	15	
		75	35	9	65	55	47	10	50	40	32	25	
		80	40	9	65	55	47	15	50	40	32	30	
		85	45	9	65	55	47	20	50	40	32	35	
		90	50	9	65	55	47	25	50	40	32	40	
		95	55	9	65	55	47	30	50	40	32	45	
		100	60	9	65	55	47	35	50	40	32	50	
		105	65	9	65	55	47	40	50	40	32	55	
		115	75	9	65	55	47	50	50	40	32	65	
		120	80	9	65	55	47	55	50	40	32	70	
150	100	9	65	55	47	85	50	40	32	100			
160	100	9	65	55	47	95	50	40	32	110			
M10	10	65	21	11	-	-	-	-	59	49	39	5	30
		80	31	11	-	-	-	-	59	49	39	20	
		85	36	11	79	69	59	5	59	49	39	25	
		90	41	11	79	69	59	10	59	49	39	30	
		95	46	11	79	69	59	15	59	49	39	35	
		115	66	11	79	69	59	35	59	49	39	55	
		120	71	11	79	69	59	40	59	49	39	60	
		130	81	11	79	69	59	50	59	49	39	70	
		140	91	11	79	69	59	60	59	49	39	80	
150	101	11	79	69	59	70	59	49	39	90			
180	100	11	79	69	59	100	59	49	39	120			
M12	12	80	30	13	-	-	-	-	70	60	48	5	50
		100	40	13	90	80	68	5	70	60	48	25	
		105	45	13	90	80	68	10	70	60	48	30	
		110	50	13	90	80	68	15	70	60	48	35	
		115	55	13	90	80	68	20	70	60	48	40	
		120	60	13	90	80	68	25	70	60	48	45	
		125	65	13	90	80	68	30	70	60	48	50	
		135	75	13	90	80	68	40	70	60	48	60	
		140	80	13	90	80	68	45	70	60	48	65	
		150	90	13	90	80	68	55	70	60	48	75	
		160	100	13	90	80	68	65	70	60	48	85	
		180	100	13	90	80	68	85	70	60	48	105	
		200	100	13	90	80	68	105	70	60	48	125	
		220	100	13	90	80	68	125	70	60	48	145	
240	100	13	90	80	68	145	70	60	48	165			
250	100	13	90	80	68	155	70	60	48	175			
260	100	13	90	80	68	165	70	60	48	185			
280	100	13	90	80	68	185	70	60	48	205			
M16	16	100	30	18	-	-	-	-	90	80	65	5	100
		105	35	18	-	-	-	-	90	80	65	10	
		125	45	18	110	100	85	5	90	80	65	25	
		130	50	18	110	100	85	10	90	80	65	30	
		140	60	18	110	100	85	20	90	80	65	40	
		150	70	18	110	100	85	30	90	80	65	50	
		160	80	18	110	100	85	40	90	80	65	60	
		180	100	18	110	100	85	60	90	80	65	80	
		200	100	18	110	100	85	80	90	80	65	100	
		220	100	18	110	100	85	100	90	80	65	120	
		250	100	18	110	100	85	130	90	80	65	150	
280	100	18	110	100	85	160	90	80	65	180			
300	100	18	110	100	85	180	90	80	65	200			

Rawl R-XPTII-A4 Anchor

Intended Use
Installation parameters

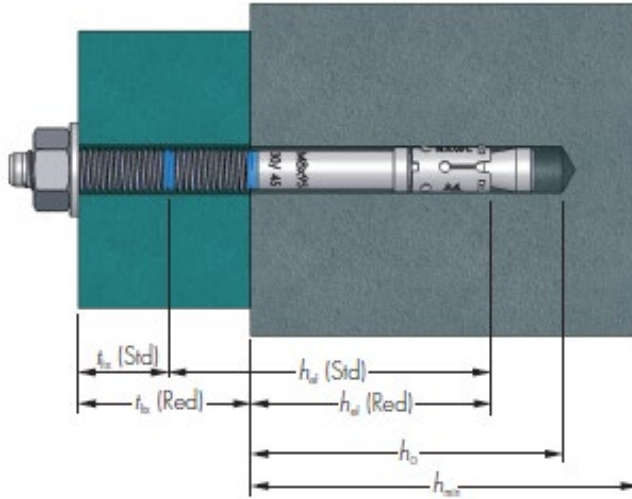
Annex B 2

Table B2 - Installation parameters – Minimum spacing and edge distance

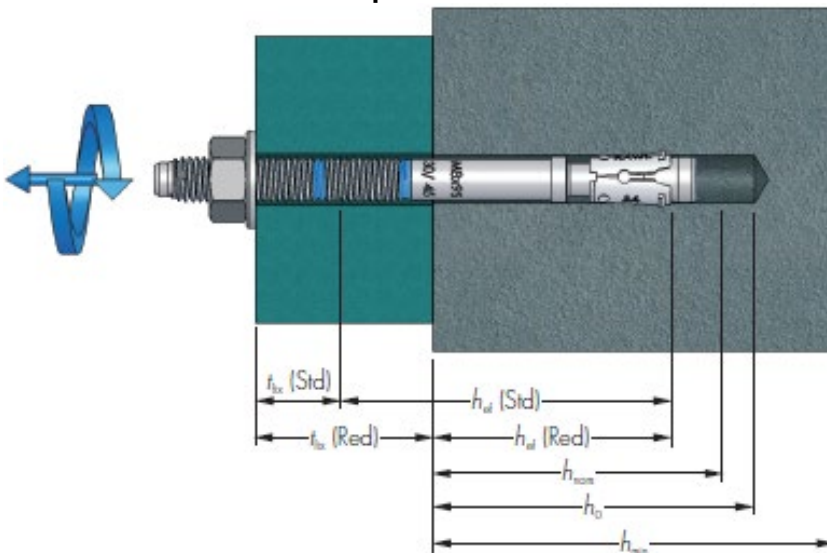
Size			M8		M10		M12		M16	
			Red ¹⁾	Std	Red ¹⁾	Std	Red	Std	Red	Std
Minimum thickness of concrete member	h_{min}	[mm]	100	100	100	120	100	140	130	170
Minimum spacing for edge distance	s_{min}	[mm]	65	65	115	90	150	110	190	170
	$c \geq$	[mm]	65	65	110	80	120	85	120	120
Minimum edge distance for spacing	c_{min}	[mm]	50	50	80	60	100	85	120	90
	$s \geq$	[mm]	100	100	150	125	190	110	190	200

¹⁾ Use restricted to anchoring statically indeterminate structural components

Pre-torque installation



Post-torque installation



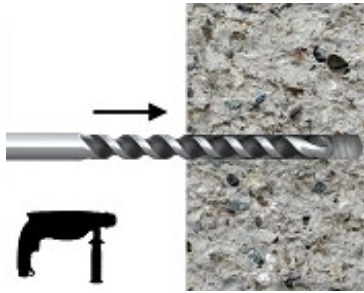
Rawl R-XPTII-A4 Anchor

Intended Use
Installation parameters

Annex B 2

Installation instructions

1. Drill a hole of required diameter and depth



2. Clear the hole of drilling dust and debris (using blowpump or equivalent method)



3. Lightly tap the throughbolt through the fixture into hole with a hammer, until fixing depth is reached



4. Tighten to the recommended torque



5. Assembled condition of anchor



Rawl R-XPTII-A4 Anchor

Intended Use
Installation instructions

Annex B 3

Table C1 – Characteristic resistance under tension load

Steel failure										
Size			M8		M10		M12		M16	
			Red ¹⁾	Std	Red ¹⁾	Std	Red	Std	Red	Std
Characteristic resistance	$N_{Rk,s}$	[kN]	21.2		33.6		44.8		82.6	
Partial safety factor	γ_{Ms}	[-]	1.5		1.5		1.5		1.5	

Pull-out failure										
Characteristic resistance in uncracked concrete C20/25	$N_{Rk,p}$	[kN]	7.5	9.0	12.0	16.0	- ²⁾	25.0	- ²⁾	- ²⁾
Installation safety factor	γ_{inst}	[-]	1.2	1.2	1.2	1.0	1.0	1.0	1.0	1.0
Increasing factor										
Uncracked concrete	C30/37	ψ_c	[-]	1.17	1.22	1.22	1.22	1.22	1.22	1.22
	C40/50			1.32	1.41	1.41	1.41	1.41	1.41	1.41
	C50/60			1.42	1.55	1.55	1.55	1.55	1.55	1.55

Concrete cone failure										
Factor for concrete cone failure for uncracked concrete	$k_{ucr,N}$	[-]	11.0							
Installation safety factor	γ_{inst}	[-]	1.2	1.2	1.2	1.0	1.0	1.0	1.0	1.0
Effective anchorage depth	h_{ef}	[mm]	32	47	39	59	48	68	65	85
Spacing	$s_{cr,N}$	[mm]	96	141	117	177	144	204	195	255
Edge distance	$c_{cr,N}$	[mm]	48	71	59	89	72	102	98	128

Splitting failure										
Spacing	$s_{cr,sp}$	[mm]	160	240	200	300	250	340	320	430
Edge distance	$c_{cr,sp}$	[mm]	80	120	100	150	125	170	160	215
Installation safety factor	γ_{inst}	[-]	1.2	1.2	1.2	1.0	1.0	1.0	1.0	1.0

¹⁾ Use restricted to anchoring statically indeterminate structural components

²⁾ Pull-out failure mode is not decisive

Table C2 – Displacement under tension load

Size			M8		M10		M12		M16	
			Red ¹⁾	Std	Red ¹⁾	Std	Red	Std	Red	Std
Tension load in uncracked concrete	N	[kN]	3.0	3.6	4.8	7.6	8.0	11.9	12.6	18.8
Displacement	δ_{N0}	[mm]	0.1	0.3	0.2	0.2	0.1	0.5	0.3	0.5
	$\delta_{N\infty}$	[mm]	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7

¹⁾ Use restricted to anchoring statically indeterminate structural components

Rawl R-XPTII-A4 Anchor

Performances

Characteristic resistance under tension load
Displacement under tension load

Annex C 1

Table C3 – Characteristic resistance under shear load

Steel failure without lever arm										
Size			M8		M10		M12		M16	
			Red ¹⁾	Std	Red ¹⁾	Std	Red	Std	Red	Std
Characteristic resistance	$V^{0}_{RK,s}$	[kN]	11.7		18.5		24.6		45.4	
Ductility factor	k_7	[-]	0.8		0.8		0.8		0.8	
Partial safety factor	γ_{Ms}	[-]	1.25		1.25		1.25		1.25	

Steel failure with lever arm										
Characteristic resistance	$M^{0}_{RK,s}$	[Nm]	22		45		72		180	
Partial safety factor	γ_{Ms}	[-]	1.25		1.25		1.25		1.25	

Concrete pry-out failure										
Factor	k_8	[-]	1.0	1.0	1.2	1.0	2.0	1.0	2.0	2.0
Installation safety factor	γ_{inst}	[-]	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2

Concrete edge failure										
Effective length of anchor	l_f	[mm]	32	47	39	59	48	68	65	85
Anchor diameter	d_{nom}	[mm]	8		10		12		16	
Installation safety factor	γ_{inst}	[-]	1.2	1.2	1.2	1.0	1.0	1.0	1.0	1.0

¹⁾ Use restricted to anchoring statically indeterminate structural components

Table C4 – Displacement under shear load

Size			M8		M10		M12		M16	
			Red ¹⁾	Std	Red ¹⁾	Std	Red	Std	Red	Std
Shear load in uncracked concrete	V	[kN]	6.7	6.7	5.8	10.6	14.1	14.1	25.9	25.9
Displacement	δ_{V0}	[mm]	3.0	3.0	1.5	2.7	2.5	2.5	2.2	2.2
	$\delta_{V\infty}$	[mm]	4.5	4.5	2.2	4.1	3.8	3.8	3.3	3.3

¹⁾ Use restricted to anchoring statically indeterminate structural components

Rawl R-XPTII-A4 Anchor

Performances

Characteristic resistance under shear load
Displacement under shear load

Annex C 2



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