INSTYTUT TECHNIKI BUDOWLANEJ

Designated according to Article 29 of Regulation (EU) No 305/2011

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European Technical Assessment

ETA-13/0584 of 24/03/2026

General Part

Technical Assessment Body issuing the European Technical Assessment	Instytut Techniki Budowlanej
Trade name of the construction product	R-DCA, R-DCA-A4 and R-DCL Wedge Anchors
Product family to which the construction product belongs	Fasteners for use in concrete for redundant non-structural applications
Manufacturer	RAWLPLUG S.A. ul. Kwidzyńska 6 51-416 Wrocław Poland
Manufacturing plants	Manufacturing plants 35, 6 and 7
This European Technical Assessment contains	17 pages including 3 Annexes which form an integral part of this Assessment
This European Technical Assessment is issued in accordance with Article 95(4) of Regulation (EU) 2024/3110, on the basis of	European Assessment Document (EAD) 330747-00-0601 “Fasteners for use in concrete for redundant non-structural systems”
This version replaces	ETA-13/0584 issued on 30/12/2019

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and shall be identified as such.

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Specific Part

1 Technical description of the product

The R-DCA, R-DCA-A4 and R-DCL Wedge Anchors are deformation-controlled expansion anchors in sizes of M6, M8, M10, M12, M16 and M20. The anchors R-DCA and R-DCL are made of galvanized steel and R-DCA-A4 are made of stainless steel.

The anchor is installed in a drilled hole and anchored by deformation-controlled expansion.

The description of the product is given in Annex A.

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

The performances given in clause 3 are only valid if the anchors are used in the compliance with the specifications and conditions given in Annex 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 or the Technical Assessment Body, 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 Performance of the product

3.1.1 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A1
Resistance to fire	Annex C4

3.1.2 Safety and accessibility in use (BWR 4)

Essential characteristic	Performance
Characteristic resistance for all load directions	Annex C1 – C3
Durability	Annex A1, A2, B1

3.2 Methods used for the assessment

The assessment has been made in accordance with EAD 330747-00-0601.

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

According to Decision 97/161/EC of the European Commission the system 2+ of assessment and verification of constancy of performance applies (see Annex V to regulation (EU) 305/2011).

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

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited in Instytut Techniki Budowlanej.

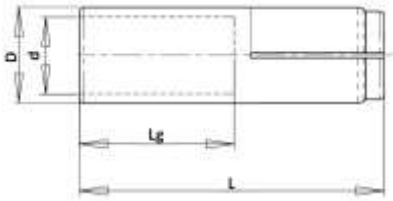
For type testing the results of the tests performed as part of the assessment for the European Technical Assessment shall be used unless there are changes in the production line or plant. In such cases the necessary type testing has to be agreed between Instytut Techniki Budowlanej and the notified body.

Issued in Warsaw on 24/03/2026 by Instytut Techniki Budowlanej

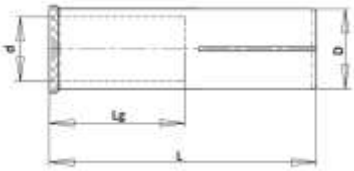


Anna Panek, MSc

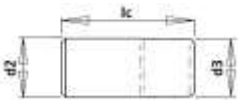
Deputy Director of ITB



R-DCA and R-DCA-A4 sleeve

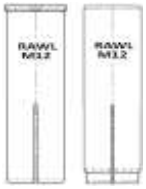


R-DCL sleeve



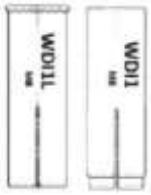
Expansion plug

Marking (used interchangeably)



Identifying mark – **RAWL**
Size: Mxx (A4)
xx – thread size
A4 – for stainless steel

or



Identifying mark – **WDI1 / WDI1L**
Size: Mxx (A4)
xx – thread size
A4 – for stainless steel

Table A1. Anchors R-DCA – materials and dimensions

R-DCA		**M6/25**	**M8/30**	**M10/40**	**M12/50**	**M16/65**	**M20/80**
Anchor length L	**[mm]**	25	30	40	50	65,5	80
Inner diameter d	**[mm]**	6	8	10	12	16	20
External diameter D	**[mm]**	8	10	12	15	20	25
Thread length Lg	**[mm]**	11,5	13,75	19	25,5	28,5	38
Anchor material	Zinc coated steel: SAE 1008 according to SAE J403, SAE 1010 according to SAE J403 or ML08AL according to GB/T 6478; zinc coating > 5 μm $f_{uk} \geq 450$ N/mm² and $f_{yk} \geq 360$ N/mm²						
Fastening screw or threaded rod material	Steel, property class ≥ 4.6 according to EN-ISO 898-1; zinc coating > 5 μm						

Table A2. Anchor R-DCA-A4 – materials and dimensions

R-DCA-A4		**M6/25**	**M8/30**	**M10/40**	**M12/50**	**M16/65**
Anchor length L	**[mm]**	25	30	40	50	65,5
Inner diameter d	**[mm]**	6	8	10	12	16
External diameter D	**[mm]**	8	10	12	15	20
Thread length Lg	**[mm]**	11,5	13,75	19	25,5	28,5
Anchor material	Stainless steel: 1.4401 according to EN 10088 (AISI 316) or SS316 according to ASTM A240/A240M $f_{uk} \geq 500$ N/mm² and $f_{yk} \geq 210$ N/mm²					
Fastening screw or threaded rod material	Stainless steel 1.4401 in accordance with EN 10088; property class ≥ 50 according to EN ISO 3506					

R-DCA, R-DCA-A4 and R-DCL Wedge Anchors	**Annex A1** of European Technical Assessment ETA-13/0584
Product description Characteristic of the product	

Table A3. Anchors R-DCL – materials and dimensions

R-DCL		M6/25	M8/25	M8/30	M10/25	M10/30	M10/40	M12/25	M12/50	M16/65	M20/80
Anchor length L	**[mm]**	25	25	30	25	30	40	25	50	65	80
Inner diameter d	**[mm]**	6	8	8	10	10	10	12	12	16	20
External diameter D	**[mm]**	8	10	10	12	12	12	15	15	20	25
Thread length Lg	**[mm]**	11,5	13,75	13,75	13,75	15	19	13,75	25,5	28,5	38
Anchor material	Zinc coated steel: SAE 1008 according to SAE J403, SAE 1010 according to SAE J403 or ML08AL according to GB/T 6478; zinc coating > 5 μm $f_{uk} \geq 450$ N/mm² and $f_{yk} \geq 360$ N/mm²										
Fastening screw or threaded rod material	Steel, property class ≥ 4.8 according to EN-ISO 898-1, zinc coating > 5 μm, for anchoring in solid concrete elements Steel, property class ≥ 4.6 according to EN-ISO 898-1, zinc coating > 5 μm, for anchoring in precast hollow core slabs										

Table A4. Expansion plug – materials and dimensions

		M6/25	M8/25	M8/30	M10/25	M10/30	M10/40	M12/25	M12/50	M16/65	M20/80
Expansion plug		M6	M8	M8	M10	M10	M10	M12	M12	M16	M20
Rear diameter d_2	**[mm]**	4,90	6,30	6,40	8,00	7,80	8,00	9,80	10,30	13,55	16,55
Front diameter d_3	**[mm]**	4,15	5,10	5,10	7,00	6,70	6,80	8,80	7,80	12,20	14,95
Length l_c	**[mm]**	9,40	8,00	11,40	8,00	13,60	16,00	8,00	20,75	25,40	30,00
Expansion plug material	Zinc coated steel: Steel SWRM8K or SWRM10K according to JISG3505; Steel Q215 according to GB/T 700; zinc coating > 5 μm Stainless steel: 1.4401 according to EN 10088 (AISI 316) or SS316 according to ASTM A240/A240M										

Specification of intended use

Anchorages subject to:

- Multiple use for redundant non-structural applications, according to EN 1992-4:2018: sizes from M6 to M20 (R-DCA and R-DCL) and sizes from M6 to M16 (R-DCA-A4).
- Static and quasi-static loading: sizes from M6 to M20 (R-DCA and R-DCL) and sizes from M6 to M16 (R-DCA-A4).
- Anchorages with requirements related to resistance to fire in solid concrete elements of strength class C20/25 to C50/60 according to EN 206:
  - sizes: M8/30, M10/40, M12/50, M16/65 i M20/80 for R-DCA and R-DCL,
  - sizes M8/30, M10/40, M12/50 i M16/65 for R-DCA-A4.

Base material:

- Reinforced or unreinforced, cracked or uncracked normal weight concrete (without fibres) of strength class C12/15 to C50/60 according to EN 206.
- Solid concrete elements: sizes from M6 to M20 (R-DCA, R-DCL) and M6 to M16 (R-DCA-A4).
- Precast prestressed hollow core slabs (with w/e ≤ 4,2) strength class C40/50 to C50/60 according to EN 206: sizes from M6 to M12 (R-DCL).

Use conditions (environmental conditions):

- R-DCA, R-DCL all sizes (galvanized steel) and R-DCA-A4 size M6 (stainless steel): structures subject to dry internal conditions.
- R-DCA-A4 sizes from M8 to M16 (stainless steel): structures subject to dry internal conditions and also in concrete subject to external atmospheric exposure (including industrial and marine environment) or exposure in permanently damp internal conditions if no particular aggressive conditions exist. Such 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:

- 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 transmitted. The position of the anchor is indicated on the design drawings (e.g. position of the anchor relative to reinforcement or to supports, etc.).
- Anchorages under static and quasi-static loads are designed according to EN 1992-4:2018; the anchors R-DCA, R-DCA-A4 and R-DCL anchored in solid concrete elements according to design method C, the anchors R-DCL anchored in precast, prestressed hollow core slabs according to design method B.
- Anchorages under fire exposure are designed according to EN 1992-4:2018.
- Fasteners are only to be used for multiple use for non-structural applications according to EAD 330747-00-0601.

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 component of the anchor.
- Anchor installation in accordance with the manufacturer's specifications and drawings and using the appropriate tools.
- Check of concrete being well compacted, e.g. without significant voids.
- Positioning of the drill holes without damaging the reinforcement.
- In case of aborted hole: 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.
- Anchor installation such that the effective anchorage depth is complied with.
- Anchor expansion by impact on the cone (expansion plug) of the anchor.

R-DCA, R-DCA-A4 and R-DCL Wedge Anchors	**Annex B1** of European Technical Assessment ETA-13/0584
Intended use Intended use	

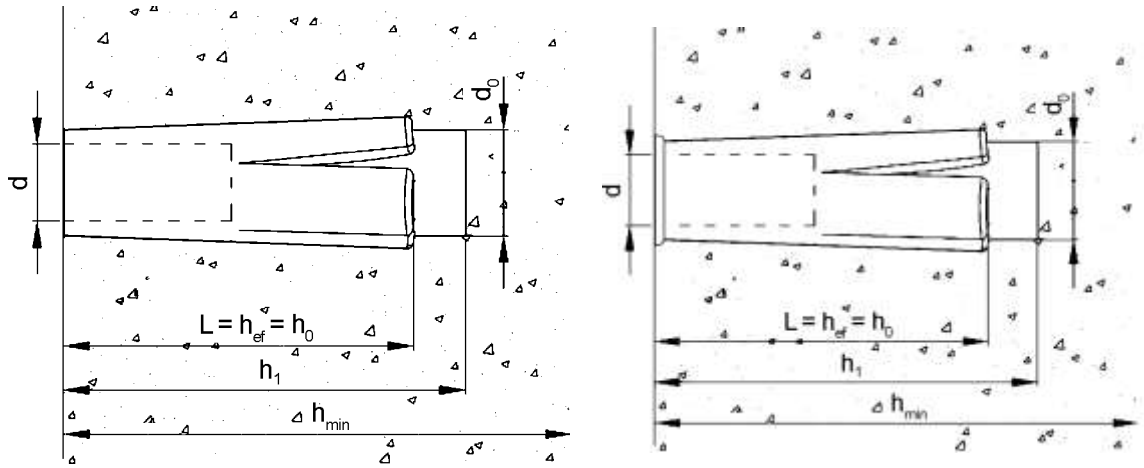
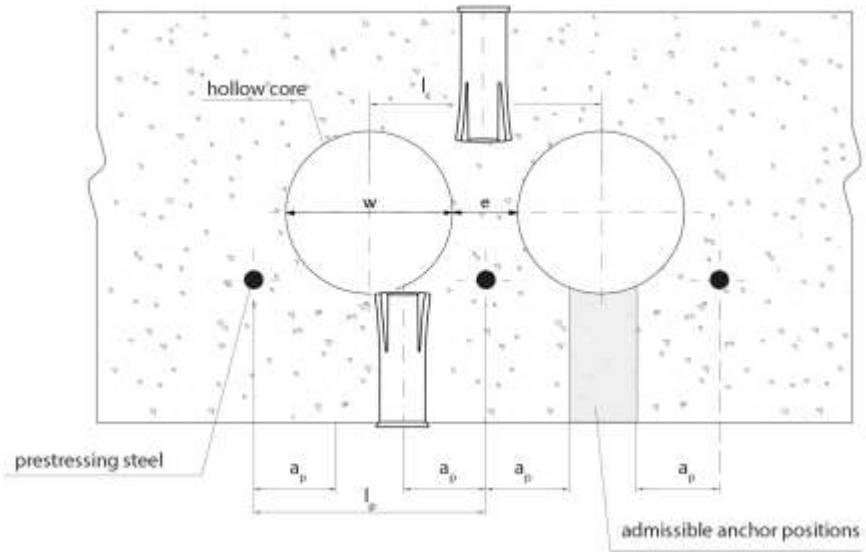


Table B1: Installation parameters of R-DCA, R-DCA-A4 and R-DCL anchors in solid concrete elements

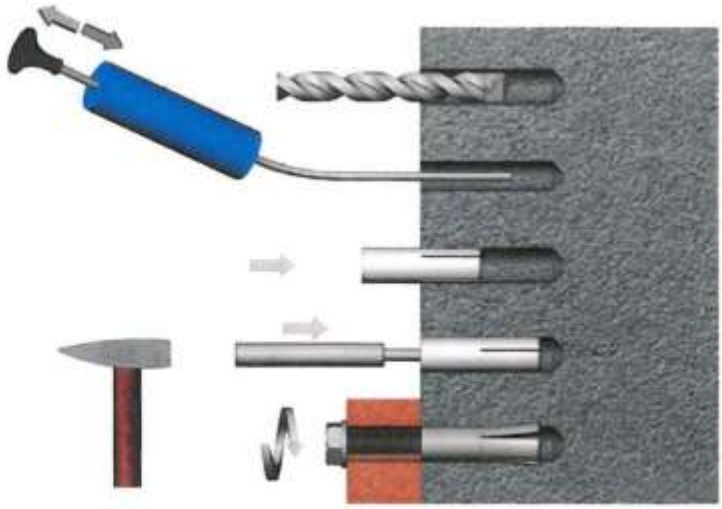
Anchor size	Drill hole diameter	Drill hole depth	Effective anchorage depth	Torque (max)	Thickness of concrete member (min)	Screwing depth (min)	Screwing depth (max)	Diameter of clearance hole in the fixture
	[mm]	[mm]	[mm]	[Nm]	[mm]	[mm]	[mm]	[mm]
	d_0	h_1	$h_{ef} = h_o$	max T_{inst}	h_{min}	$l_{s, min}$	$l_{s, max}$	d_f
M6/25	8	27	25	4,5	80	6	11	7
M8/25	10	27	25	11	80	8	13	9
M8/30	10	32	30	11	80	8	13	9
M10/25	12	27	25	22	80	10	13	12
M10/30	12	32	30	22	80	10	13	12
M10/40	12	42	40	22	80	10	15	12
M12/25	15	27	25	38	80	12	13	14
M12/50	15	52	50	38	100	12	25	14
M16/65	20	67	65	98	130	16	25	18
M20/80	25	82	80	130	160	20	35	22

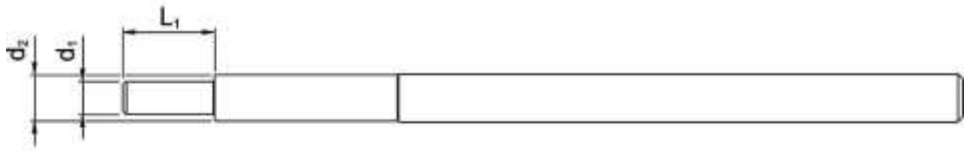


Core width / Web thickness; w / e	≤ 4,2
Core distance	$l_c \geq 100$ mm
Prestressing steel	$l_p \geq 100$ mm
Distance between anchor position and prestressing steel	$a_p \geq 50$ mm

Table B2: Installation parameters of R-DCL anchors in precast, prestressed hollow core slabs

Anchor size	Drill hole diameter	Drill hole depth	Effective anchorage depth	Torque (max)	Screwing depth (min)	Screwing depth (max)	Diameter of clearance hole in the fixture
	[mm]	[mm]	[mm]	[Nm]	[mm]	[mm]	[mm]
	d_0	h_0	h_{ef}	max T_{inst}	$l_{s,\,min}$	$l_{s,\,max}$	d_f
M6/25	8	25	25	4,5	6	11	7
M8/25	10	27	25	11	8	13	9
M8/30	10	32	30	11	8	13	9
M10/25	12	27	25	22	10	13	12
M10/30	12	32	30	22	10	13	12
M10/40	12	42	40	22	10	15	12
M12/25	15	27	25	38	12	13	14
M12/50	15	52	50	38	12	25	14





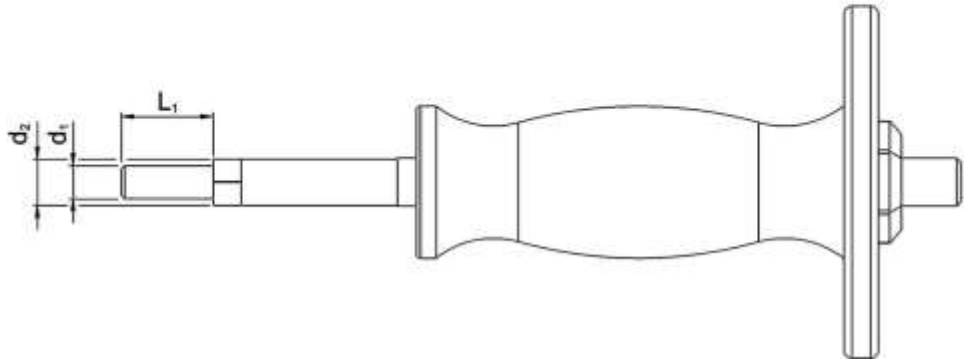


Table B3: Installation tools

Installation tools		M6/25	M8/25	M8/30	M10/25	M10/30	M10/40	M12/25	M12/50	M16/65	M20/80
Diameter d_1	mm	5,0	6,6	6,6	8,3	8,3	8,3	10,2	10,2	13,5	16,8
Diameter d_2	mm	7,5	9,5	9,5	11,5	11,5	11,5	14,5	14,5	19,5	24,5
Length L_1	mm	14,8	17,0	18,0	17,0	18	23,0	17,0	28,0	33,0	47,0



Drill a hole of required diameter and depth.

Clear the hole of drilling dust and debris (using blow pump).

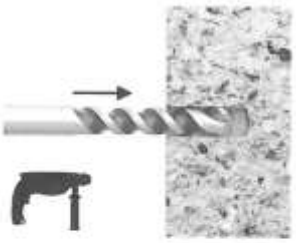
Insert the anchor (slotted end first).

Use the setting tool to drive the internal wedge into the anchor.

Insert screw or threaded rod through fixture and tighten, not pass over the maximum torque.

After installation.

R-DCA, R-DCA-A4 and R-DCL Wedge Anchors	**Annex B5** of European Technical Assessment ETA-13/0584
Intended use Installation instruction – R-DCA and R-DCA-A4 anchor in solid concrete element	



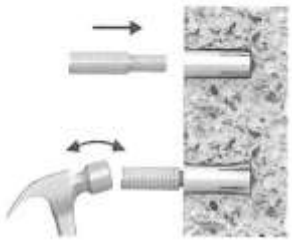
Drill a hole of required diameter
and depth.



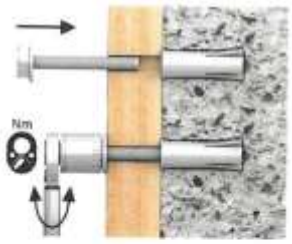
Clear the hole of drilling dust
and debris (using blow pump).



Insert the anchor
(slotted end first).



Use the setting tool to drive
the internal wedge into the anchor.

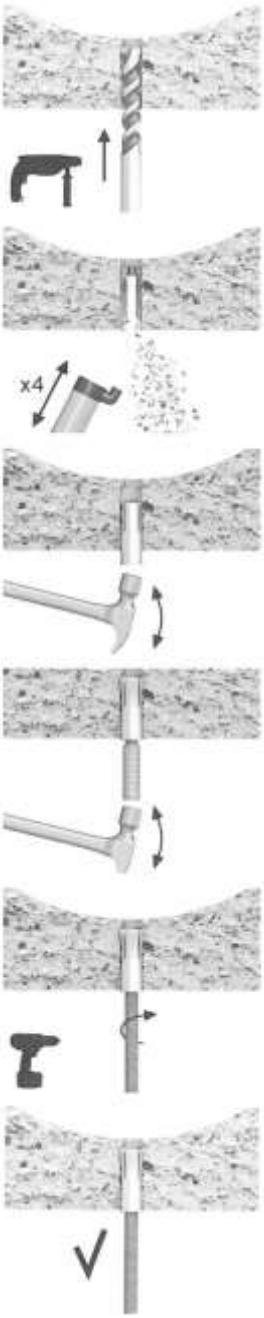


Insert screw or threaded rod
through fixture and tighten,
not pass over the maximum torque.



After Installation.

R-DCA, R-DCA-A4 and R-DCL Wedge Anchors	**Annex B6** of European Technical Assessment ETA-13/0584
Intended use Installation instruction – R-DCL anchor in solid concrete element	



Drill a hole of required diameter and depth.

Clear the hole of drilling dust and debris (using blow pump).

Insert the anchor (slotted end first).

Use the setting tool to drive the internal wedge into the anchor.

Insert screw or threaded rod through fixture and tighten, not pass over the maximum torque.

After installation.

R-DCA, R-DCA-A4 and R-DCL Wedge Anchors	**Annex B7** of European Technical Assessment ETA-13/0584
Intended use Installation instruction – R-DCL anchor in precast, prestressed hollow core slabs	

Table C1: Characteristic resistance – R-DCA – in solid concrete elements

R-DCA			Property class	M6/25	M8/30	M10/40	M12/50	M16/65	M20/80
All load directions (fastening screw or threaded rod property class ≥ 4.6)									
Characteristic resistance in cracked and uncracked concrete C12/15	F^0_{Rk}	[kN]	≥ 4.6	1,2	2	3,5	5	10	13
Characteristic resistance in cracked and uncracked concrete C20/25 to C50/60	F^0_{Rk}	[kN]	≥ 4.6	1,5	3	4,5	6	13	17
Partial safety factor	γ_2 (1)	[–]	–	1,2					
Spacing	s_{cr}	[mm]		200				260	320
Edge distance	c_{cr}	[mm]		150				195	240
Shear load with lever arm									
Characteristic bending resistance	$M^0_{Rk,s}$	[Nm]	4.6	6	15	30	52	133	260
Characteristic bending resistance	$M^0_{Rk,s}$	[Nm]	4.8	6	15	30	52	133	260
Characteristic bending resistance	$M^0_{Rk,s}$	[Nm]	5.8	8	19	37	66	167	325
Characteristic bending resistance	$M^0_{Rk,s}$	[Nm]	6.8	9	23	45	79	200	390
Characteristic bending resistance	$M^0_{Rk,s}$	[Nm]	8.8	12	30	60	105	267	520
Partial safety factor	γ_{Ms} (1)	[–]	–	1,25					

(1) in the absence of other national regulations

Table C2: Characteristic resistance – R-DCA-A4 – in solid concrete elements

R-DCA-A4			Property class	M6/25	M8/30	M10/40	M12/50	M16/65
All load directions (fastening screw or threaded rod property class A4-50 and A4-70)								
Characteristic resistance in cracked and uncracked concrete C12/15	F^0_{Rk}	[kN]	A4-50 A4-70	0,75	1,5	2,5	3,5	6,5
Characteristic resistance in cracked and uncracked concrete C20/25 to C50/60	F^0_{Rk}	[kN]	A4-50 A4-70	1,0	2,0	3,0	4,5	8,0
Partial safety factor	γ_2 (1)	[–]	–	1,2				
Spacing	s_{cr}	[mm]		200				260
Edge distance	c_{cr}	[mm]		150				195
Shear load with lever arm								
Characteristic bending resistance	$M^0_{Rk,s}$	[Nm]	A4-50	8	19	37	66	167
Characteristic bending resistance	$M^0_{Rk,s}$	[Nm]	A4-70	11	26	52	92	233
Partial safety factor	γ_{Ms} (1)	[–]	–	1,25				

(1) in the absence of other national regulations

Table C3: Characteristic resistance – R-DCL – in solid concrete elements

R-DCL			Property class	M6/ 25	M8/ 25	M8/ 30	M10/ 25	M10/ 40	M12/ 25	M12/ 50	M16/ 65	M20/ 80
All load directions (fastening screw or threaded rod property class ≥ 4.8)												
Characteristic resistance in cracked and uncracked concrete class C12/15	F^0_{Rk}	[kN]	≥ 4.8	1,2	0,75	2	1,2	3,5	1,5	5	10	13
Characteristic resistance in cracked and uncracked concrete class C20/25 to C50/60	F^0_{Rk}	[kN]	≥ 4.8	1,5	1	3	1,5	4,5	2	6,5	13	17
Partial safety factor	γ_2 (1)	[–]	–	1,2								
Spacing	s_{cr}	[mm]		200							260	320
Edge distance	c_{cr}	[mm]		150							195	240
Shear load with lever arm												
Characteristic bending resistance	$M^0_{Rk,s}$	[Nm]	4.8	6	15	15	30	30	52	52	133	260
Characteristic bending resistance	$M^0_{Rk,s}$	[Nm]	5.8	8	19	19	37	37	66	66	167	325
Characteristic bending resistance	$M^0_{Rk,s}$	[Nm]	6.8	9	23	23	45	45	79	79	200	390
Characteristic bending resistance	$M^0_{Rk,s}$	[Nm]	8.8	12	30	30	60	60	105	105	267	520
Partial safety factor	γ_{Ms} (1)	[–]	–	1,25								

(1) in the absence of other national regulations

Table C4: Characteristic resistance – R-DCL – in precast, prestressed hollow core slabs

R-DCL			Property class	M6/ 25	M8/ 25	M8/ 30	M10/ 25	M10/ 30	M10/ 40	M12/ 25	M12/ 50
All load directions (fastening screw or threaded rod property class ≥ 4.6)											
Bottom flange thickness	d_b	[mm]	–	30	40	30	40	40	30	40	30
Characteristic resistance in hollow concrete slabs class C40/50 to C50/60	F^0_{Rk}	[kN]	≥ 4.6	3,5	4,5	4,0	5,5	12	14	7	16
Partial safety factor	γ_{inst}	[–]	–	1,4	1,4	1,4	1,4	1,0	1,4	1,4	1,2
Spacing	s_{cr}	[mm]		200							
Edge distance	c_{cr}	[mm]		300							
Shear load with lever arm											
Characteristic bending resistance	$M^0_{Rk,s}$	[Nm]	4.6	6	15	15	30	30	30	52	52
Characteristic bending resistance	$M^0_{Rk,s}$	[Nm]	4.8	6	15	15	30	30	30	52	52
Characteristic bending resistance	$M^0_{Rk,s}$	[Nm]	5.8	8	19	19	37	37	37	66	66
Characteristic bending resistance	$M^0_{Rk,s}$	[Nm]	6.8	9	23	23	45	45	45	79	79
Characteristic bending resistance	$M^0_{Rk,s}$	[Nm]	8.8	12	30	30	60	60	60	105	105
Partial safety factor	γ_{Ms} (1)	[–]	–	1,25							

(1) in the absence of other national regulations

Table C5: Characteristic resistance under fire exposure in solid concrete elements of strength class C20/25 to C50/60 – R-DCA and R-DCL

Fire resistance class	R-DCA and R-DCL		M8/30	M10/40	M12/50	M16/65	M20/80
All load directions							
R30	Characteristic resistance $F^0_{Rk,fi}$ (1) (2)	[kN]	0,37	0,87	1,61	3,14	4,35
R60		[kN]	0,33	0,75	1,26	2,36	3,68
R90		[kN]	0,26	0,58	1,10	2,04	3,19
R120		[kN]	0,18	0,46	0,84	1,57	2,45
R30	Characteristic bending resistance $M^0_{Rk,s,fi}$	[kNm]	0,60	1,77	4,07	9,65	18,85
R60		[kNm]	0,54	1,53	3,05	7,24	14,14
R90		[kNm]	0,42	1,18	2,65	6,27	12,25
R120		[kNm]	0,30	0,94	2,04	4,83	9,42
Spacing	$s_{cr,fi}$	[mm]	4 x h_{ef}				
Edge distance	$c_{cr,fi}$	[mm]	2 x h_{ef}				

The design method covers anchors with a fire attack from one side only. In case of fire attack from more than one side, the edge distance shall be ≥ 300 mm.
(1) in the absence of other national regulations a partial safety factor $\gamma_{m,fi}$ = 1,0 is recommended
(2) fastening screw or threaded rod property class not less than 4.6

Table C6: Characteristic resistance under fire exposure in solid concrete elements of strength class C20/25 to C50/60 – R-DCA-A4

Fire resistance class	R-DCA-A4		M8/30	M10/40	M12/50	M16/65
All load directions						
R30	Characteristic resistance $F^0_{Rk,fi}$ (1) (2)	[kN]	0,50	0,80	1,15	2,07
R60		[kN]	0,50	0,80	1,15	2,07
R90		[kN]	0,44	0,80	1,15	2,07
R120		[kN]	0,37	0,64	0,92	1,65
R30	Characteristic bending resistance $M^0_{Rk,s,fi}$	[kNm]	1,21	2,95	6,11	14,48
R60		[kNm]	0,97	2,36	5,09	12,06
R90		[kNm]	0,72	1,88	4,07	9,65
R120		[kNm]	0,60	1,65	3,26	7,72
Spacing	$s_{cr,fi}$	[mm]	4 x h_{ef}			
Edge distance	$c_{cr,fi}$	[mm]	2 x h_{ef}			

The design method covers anchors with a fire attack from one side only. In case of fire attack from more than one side, the edge distance shall be ≥ 300 mm.
(1) in the absence of other national regulations a partial safety factor $\gamma_{m,fi}$ = 1,0 is recommended
(2) fastening screw or threaded rod property class not less than A4-50