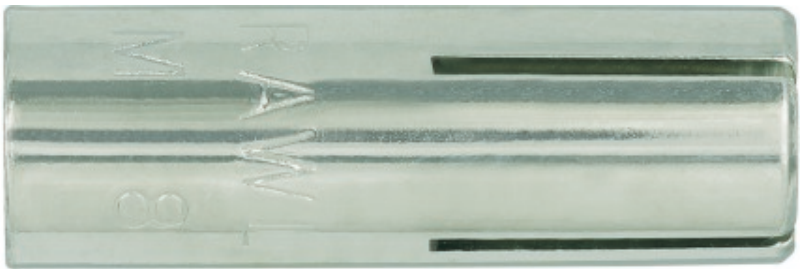
R-DCA Wedge Anchor

Internally threaded wedge anchor for simple hammer-set installation



Approvals and Reports

- ETA-13/0584

Product information

Features and benefits

- High performance in cracked and non-cracked concrete confirmed by ETA
- Product recommended for applications requiring fire resistance
- Internally threaded to be used with threaded stud or bolt
- Easy to install by hammer action
- Slotted sleeve and internal wedge component together facilitate easy setting and expansion

Applications

- Pipelines systems
- Ventilation systems
- Sprinkler systems
- Cable conduits and wires
- Gratings

Base materials

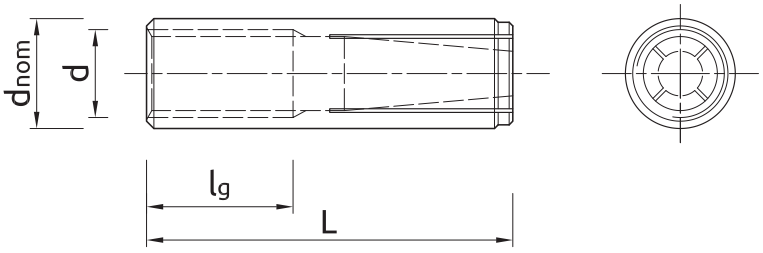
Approved for use in:

- Cracked concrete C20/25-C50/60
- Non-cracked concrete C20/25-C50/60
- Unreinforced concrete
- Reinforced concrete

Installation guide

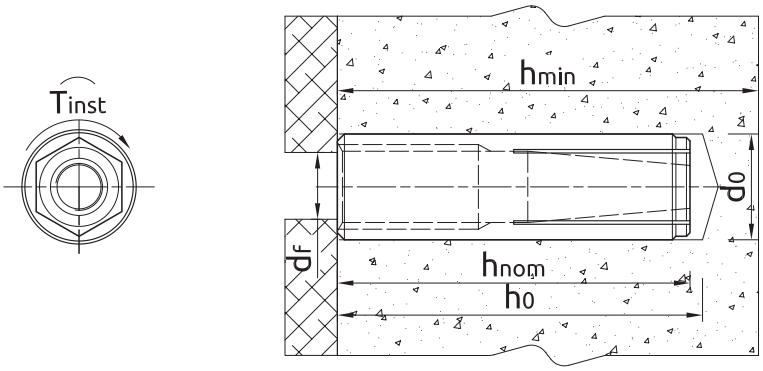
1. Drill a hole of required diameter and depth
2. Clear the hole of drilling dust and debris (using blowpump or equivalent method)
3. Insert wedge anchor, slotted end first
4. Use the setting tool to drive the internal wedge into the anchor
5. Insert bolt or stud through fixture and tighten to the recommended torque

Product information



Size	Product Code	Anchor				Fixture
		Diameter	External diameter	Length	Internal thread length	Hole diameter
		d	d_{nom}	L	l_g	d_f
		[mm]	[mm]	[mm]	[mm]	[mm]
M6	R-DCA-06-25	6	8	25	11	7
M8	R-DCA-08-30	8	10	30	13	9
M10	R-DCA-10-40	10	12	40	15	12
M12	R-DCA-12-50	12	15	50	20	14
M16	R-DCA-16-65	16	20	65	25	18
M20	R-DCA-20-80	20	25	80	35	22

Installation data



Size			M6	M8	M10	M12	M16	M20
Thread diameter	d	[mm]	6	8	10	12	16	20
Hole diameter in substrate	d_0	[mm]	8	10	12	15	20	25
Installation torque	T_{inst}	[Nm]	4.5	11	22	38	98	130
Min. hole depth in substrate	h_0	[mm]	30	32	42	53	70	85
Installation depth	h_{nom}	[mm]	25	30	40	50	65	80
Min. substrate thickness	h_{min}	[mm]	80	80	80	100	130	160
Min. spacing	s_{min}	[mm]	105	105	220	220	220	225
Min. edge distance	c_{min}	[mm]	105	105	220	220	220	225

Mechanical properties

Size			M6	M8	M10	M12	M16	M20
Nominal ultimate tensile strength - tension	f_{uk}	[N/mm²]	450	450	450	450	450	450
Nominal yield strength - tension	f_{yk}	[N/mm²]	360	360	360	360	360	360
Cross sectional area - tension	A_s	[mm²]	20.1	36.6	58	84.3	157	245
Elastic section modulus	W_{el}	[mm³]	21.21	50.3	98.2	169.7	402.1	785.4
Characteristic bending resistance	$M^0_{Rk,s}$	[Nm]	12.72	30.2	61	101.8	241.3	471.2
Design bending resistance	M	[Nm]	10.18	24.1	49	81.4	193	377

Basic performance data

Performance data for single anchor without influence of edge distance and spacing

Size		M6	M8	M10	M12	M16	M20
Effective embedment depth h_{ef}	[mm]	25.00	30.00	40.00	50.00	65.00	80.00
CHARACTERISTIC LOAD							
TENSION LOAD N_{Rk}	[kN]	1.52	3.00	4.57	6.40	13.30	17.40
SHEAR LOAD V_{Rk}	[kN]	1.52	3.00	4.57	6.40	13.30	17.40
DESIGN LOAD							
TENSION LOAD N_{Rd}	[kN]	0.72	1.43	2.18	3.06	6.30	8.30
SHEAR LOAD V_{Rd}	[kN]	0.72	1.43	2.18	3.06	6.30	8.30
RECOMMENDED LOAD							
TENSION LOAD N_{rec}	[kN]	0.51	1.02	1.55	2.19	4.50	5.90
SHEAR LOAD V_{rec}	[kN]	0.51	1.02	1.55	2.19	4.50	5.90

Design performance data

Size			M6	M8	M10	M12	M16	M20
Effective embedment depth	h_{ef}	[mm]	25.00	30.00	40.00	50.00	65.00	80.00
TENSION AND SHEAR LOAD								
Characteristic resistance	F_{Rk}	[kN]	1.50	3.00	4.57	6.40	13.30	17.40
Design resistance γ_M^*= 2.1	F_{Rd}	[kN]	0.70	1.40	2.18	3.06	6.30	8.28
Spacing	s_{cr}	-	200.00	200.00	200.00	200.00	260.00	320.00
Edge distance	c_{cr}	-	150.00	150.00	150.00	150.00	195.00	240.00
SHEAR LOAD								
STEEL FAILURE								
Characteristic resistance with lever arm	$M_{Rk,s}$	[kN]	6.00	15.00	30.00	52.00	133.00	260.00
Characteristic resistance with lever arm	$M_{Rk,s}$	[kN]	8.00	19.00	37.00	66.00	167.00	325.00
Characteristic resistance with lever arm	$M_{Rk,s}$	[kN]	9.00	23.00	45.00	79.00	200.00	390.00
Characteristic resistance with lever arm	$M_{Rk,s}$	[kN]	12.00	30.00	60.00	105.00	267.00	520.00
Design resistance γ_{Ms}= 1.25	$M_{Rd,s}$	[kN]	4.80	12.00	24.00	41.60	106.40	208.00
Design resistance γ_{Ms}= 1.25	$M_{Rd,s}$	[kN]	6.40	15.20	29.60	52.80	133.60	260.00
Design resistance γ_{Ms}= 1.25	$M_{Rd,s}$	[kN]	7.20	18.40	36.00	63.20	160.00	312.00
Design resistance γ_{Ms}= 1.25	$M_{Rd,s}$	[kN]	9.60	24.00	48.00	84.00	213.60	416.00

Characteristic Resistance under fire exposure in concrete C20/25 to C50/60

Size			M8	M10	M12	M16	M20
TENSION AND SHEAR LOAD							
Spacing	s_{cr}	[mm]	120.00	160.00	200.00	260.00	320.00
Edge distance	c_{cr}	[mm]	60.00	80.00	100.00	130.00	160.00
R (for EI) = 30 min							
TENSION AND SHEAR LOAD							
Characteristic resistance	F_{Rk}	[kN]	0.40	0.90	1.60	3.10	4.30
R (for EI) = 60 min							
TENSION AND SHEAR LOAD							
Characteristic resistance	F_{Rk}	[kN]	0.30	0.80	1.30	2.40	3.70
R (for EI) = 90 min							
TENSION AND SHEAR LOAD							
Characteristic resistance	F_{Rk}	[kN]	0.30	0.60	1.10	2.00	3.20
R (for EI) = 120 min							
TENSION AND SHEAR LOAD							
Characteristic resistance	F_{Rk}	[kN]	0.20	0.50	0.80	1.60	2.50

Product commercial data

Size	Product Code	Anchor		Quantity [pcs]			Weight [kg]			Bar Codes
		Diameter [mm]	Length [mm]	Box	Outer	Pallet	Box	Outer	Pallet	
M6	R-DCA-06-25[1)]	6	25	100	1000	36000	0.67	6.7	271.2	5010445771088
M8	R-DCA-08-30[1)]	8	30	100	1000	60000	1.19	11.9	744.0	5010445771200
M10	R-DCA-10-40[1)]	10	40	50	500	37500	1.15	11.5	892.5	5906675151687
M12	R-DCA-12-50[1)]	12	50	50	400	18000	2.3	18.3	854.4	5906675152004
M16	R-DCA-16-65[1)]	16	65	25	100	6000	2.7	10.8	680.4	5010445771507
M20	R-DCA-20-80[1)]	20	80	15	90	3240	3.0	18.1	680.9	5010445002298

1) ETA-13/0584