R-KER with Rebars as an Anchor

High performance vinylester resin approved for use with reinforcement bars

Approvals and Reports

- ETA-13/0805

Product information

Features and benefits

- Approved for use with rebar as an anchor for use in non-cracked concrete (ETAG001 Option 7)
- Suitable for use in low temperatures (down to -20°C for winter option) enables use throughout the year
- Winter version can be used in warmer temperatures for faster curing
- Suitable for use in dry and wet substrates as well as holes and substrates covered with water
- Rapid bonding time enables quick execution of works
- Very high load capacity
- Anchor does not generate tensions in the substrate which enables its installation in minimum distance and close to the edge of the substrate
- Suitable for multiple use. Partly used product can be reused after fitting new nozzle

Applications

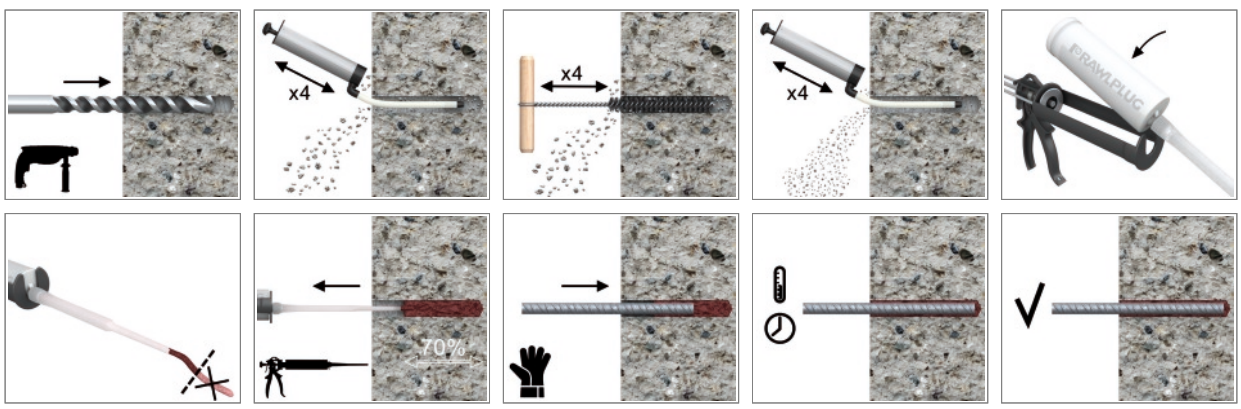
- Curtain walling
- Balustrading
- Barriers
- Cable trays
- Cladding restraints
- Structural steelwork
- Rebar dowelling
- Starter bars
- Rebar missed-outs

Base materials

Approved for use in:

- Non-cracked concrete C20/25-C50/60

Installation guide

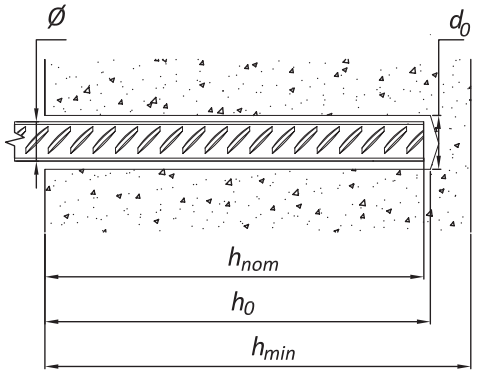


Product information

1. Drill hole to the required diameter and depth for rebar size being used.
2. Clean the hole with brush and hand pump at least four times each. It is very important and necessary before installation.
3. Insert cartridge into gun and attach nozzle.
4. Dispense to waste until even colour is obtained.
5. Insert the mixing nozzle to the far end of the hole and inject resin, slowly withdrawing the nozzle as the hole is filled to 2/3 of its depth.
6. Immediately insert the rebar, slowly and with slight twisting motion. Remove anyexcess resin around the hole before it sets and leave it undisturbed until the curing time elapses. Attach fixture and tighten the nut to the required torque.

Product Code	Resin	Description / Resin Type	Volume [ml]
R-KER-280	R-KER	Styrene Free Vinylester Resin	280
R-KER-300			300
R-KER-345			345
R-KER-310			310
R-KER-380			380
R-KER-400			400
R-KER-300-W	R-KER-W	Low Temperature (Winter) / Rapid Cure Styrene Free Vinylester Resin	300
R-KER-380-W			380
R-KER-400-W			400
R-KER-380-S	R-KER-S	High Temperature (Summer) / Slow Cure Styrene Free Vinylester Resin	380
R-KER-400-S			400

Installation data



REBARS AS ANCHORS

Size			Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø25	Ø32
Thread diameter	d	[mm]	8	10	12	14	16	20	25	32
Hole diameter in substrate	d_0	[mm]	12	14	18	18	22	26	32	40
Min. hole depth in substrate	h_0	[mm]	h_{ef} + 5	h_{ef} + 5	h_{ef} + 5	h_{ef} + 5	h_{ef} + 5	h_{ef} + 5	h_{ef} + 5	h_{ef} + 5
MINIMUM EMBEDMENT DEPTH										
Installation depth	$h_{nom, min}$	[mm]	60	70	80	80	100	120	140	165
STANDARD EMBEDMENT DEPTH										
Installation depth	$h_{nom,s}$	[mm]	80	90	110	110	125	170	210	240
MAXIMUM EMBEDMENT DEPTH										
Installation depth	$h_{nom, max}$	[mm]	100	120	145	145	190	240	290	360
Min. substrate thickness	h_{min}	[mm]	h_{ef} + 30 100	h_{ef} + 30 100	h_{ef} + $2*d_0$	h_{ef} + $2*d_0$	h_{ef} + $2*d_0$	h_{ef} + $2*d_0$	h_{ef} + $2*d_0$	h_{ef} + $2*d_0$
Min. spacing	s_{min}	[mm]	0.5 * h_{ef} 40	0.5 * h_{ef} 40	0.5 * h_{ef} 40	0.5 * h_{ef} 40	0.5 * h_{ef} 40	0.5 * h_{ef} 40	0.5 * h_{ef} 40	0.5 * h_{ef} 40
Min. edge distance	c_{min}	[mm]	0.5 * h_{ef} 40	0.5 * h_{ef} 40	0.5 * h_{ef} 40	0.5 * h_{ef} 40	0.5 * h_{ef} 40	0.5 * h_{ef} 40	0.5 * h_{ef} 40	0.5 * h_{ef} 40

Installation data

Minimum working and curing time

R-KER

Resin temperature	Concrete temperature	Curing time*	Working time
[°C]	[°C]	[min]	[min]
5	-20	-	-
5	-15	-	-
5	-10	-	-
5	-5	240	60
5	0	180	40
5	5	120	20
10	10	80	12
15	15	60	8
20	20	45	5
25	25	30	3
25	30	20	2
25	40	10	0.5

R-KER-W

Resin temperature	Concrete temperature	Curing time*	Working time
[°C]	[°C]	[min]	[min]
5	-20	1440	100
5	-15	960	60
5	-10	480	30
5	-5	240	16
5	0	120	12
5	5	60	8
10	10	45	5
15	15	30	3
20	20	10	2

R-KER-S

Resin temperature	Concrete temperature	Curing time*	Working time
[°C]	[°C]	[min]	[min]
5	-20	-	-
5	-15	-	-
5	-10	-	-
5	-5	1440	65
5	0	960	50
5	5	720	35
10	10	480	20
15	15	360	12
20	20	240	9
25	25	180	7
25	30	120	6
25	40	45	4
25	45	35	3
25	50	25	2

Mechanical properties

REBARS AS ANCHORS

Size			Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø25	Ø32
18G2										
Nominal ultimate tensile strength - tension	f_{uk}	[N/mm²]	480	480	480	480	480	480	480	480
Nominal yield strength - tension	f_{yk}	[N/mm²]	355	355	355	355	355	355	355	355
Cross sectional area - tension	A_s	[mm²]	50.3	78.5	113.1	153.9	201.1	314.2	490.9	804.2
Elastic section modulus	W_{el}	[mm³]	50.3	98.2	169.6	269.4	402.1	785.4	1534	3217
Characteristic bending resistance	$M^0_{Rk,s}$	[Nm]	29	57	98	155	232	452	884	1853
Design bending resistance	M	[Nm]	19	38	65	103	154	302	589	1235
Allowable bending resistance	M_{rec}	[Nm]	14	27	47	74	110	215	421	882
34GS										
Nominal ultimate tensile strength - tension	f_{uk}	[N/mm²]	500	500	500	500	500	500	500	500
Nominal yield strength - tension	f_{yk}	[N/mm²]	410	410	410	410	410	410	410	410
Cross sectional area - tension	A_s	[mm²]	50.3	78.5	113.1	153.9	201.1	314.2	490.9	804.2
Elastic section modulus	W_{el}	[mm³]	50.3	98.2	169.6	269.4	402.1	785.4	1534	3217
Characteristic bending resistance	$M^0_{Rk,s}$	[Nm]	30	59	102	162	241	471	920	1930
Design bending resistance	M	[Nm]	20	39	68	108	161	314	614	1287
Allowable bending resistance	M_{rec}	[Nm]	14	28	48	77	115	224	438	919
B500SP										
Nominal ultimate tensile strength - tension	f_{uk}	[N/mm²]	575	575	575	575	575	575	575	575
Nominal yield strength - tension	f_{yk}	[N/mm²]	500	500	500	500	500	500	500	500
Cross sectional area - tension	A_s	[mm²]	50.3	78.5	113.1	153.9	201.1	314.2	490.9	804.2
Elastic section modulus	W_{el}	[mm³]	50.3	98.2	169.6	269.4	402.1	785.4	1534	3217
Characteristic bending resistance	$M^0_{Rk,s}$	[Nm]	35	68	117	186	277	542	1059	2220
Design bending resistance	M	[Nm]	23	45	78	124	185	361	706	1480
Allowable bending resistance	M_{rec}	[Nm]	17	32	56	89	132	258	504	1057
RB500/BSt500S										
Nominal ultimate tensile strength - tension	f_{uk}	[N/mm²]	550	550	550	550	550	550	550	550
Nominal yield strength - tension	f_{yk}	[N/mm²]	500	500	500	500	500	500	500	500
Cross sectional area - tension	A_s	[mm²]	50.3	78.5	113.1	153.9	201.1	314.2	490.9	804.2
Elastic section modulus	W_{el}	[mm³]	50.3	98.2	169.6	269.4	402.1	785.4	1534	3217
Characteristic bending resistance	$M^0_{Rk,s}$	[Nm]	33	65	112	178	265	518	1012	2123
Design bending resistance	M	[Nm]	22	43	75	119	177	346	675	1415
Allowable bending resistance	M_{rec}	[Nm]	16	31	53	85	126	247	482	1011

Basic performance data

REBARS AS ANCHORS

Size		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø25	Ø32
Substrate		Non-cracked concrete							
CHARACTERISTIC LOAD									
TENSION LOAD N_{Rk}									
A-II (e.g. 18G2)									
Minimum embedment depth	[kN]	16.6	22.0	30.2	31.7	45.2	56.5	77.0	107.0
Standard embedment depth	[kN]	22.1	28.3	41.5	43.5	56.5	80.1	115.5	156.8
Maximum embedment depth	[kN]	24.1	37.7	54.3	57.4	86.0	113.1	159.4	235.2
A-III (e.g. 34GS)									
Minimum embedment depth	[kN]	16.6	22.0	30.2	31.7	45.2	56.5	77.0	107.0
Standard embedment depth	[kN]	22.1	28.3	41.5	43.5	56.5	80.1	115.5	156.8
Maximum embedment depth	[kN]	25.1	37.7	54.7	57.4	86.0	113.1	159.4	235.2
A-III-N (e.g. RB500, BST500S, B500SP)									
Minimum embedment depth	[kN]	16.6	22.0	30.2	31.7	45.2	56.5	77.0	107.0
Standard embedment depth	[kN]	22.1	28.3	41.5	43.5	56.5	80.1	115.5	156.8
Maximum embedment depth	[kN]	27.6	37.7	54.7	57.4	86.0	113.1	159.4	235.2
SHEAR LOAD V_{Rk}									
A-II (e.g. 18G2)	[kN]	12.1	18.8	27.1	36.9	48.3	75.4	117.8	193.0
A-III (e.g. 34GS)	[kN]	12.6	19.6	28.3	38.5	50.3	78.5	122.7	201.1
A-III-N (e.g. RB500, BST500S, B500SP)	[kN]	13.8	21.6	31.1	42.3	55.3	86.4	135.0	221.2
DESIGN LOAD									
TENSION LOAD N_{Rd}									
A-II (e.g. 18G2)									
Minimum embedment depth	[kN]	9.20	12.2	16.8	17.6	25.1	31.4	42.8	59.5
Standard embedment depth	[kN]	12.3	15.7	23.0	24.2	31.4	44.5	64.1	87.1
Maximum embedment depth	[kN]	15.4	20.9	30.4	31.9	47.8	62.8	88.6	130.7
A-III (e.g. 34GS)									
Minimum embedment depth	[kN]	9.20	12.2	16.8	17.6	25.1	31.4	42.8	59.5
Standard embedment depth	[kN]	12.3	15.7	23.0	24.2	31.4	44.5	64.1	87.1
Maximum embedment depth	[kN]	15.4	20.9	30.4	31.9	47.8	62.8	88.6	130.7
A-III-N (e.g. RB500, BST500S, B500SP)									
Minimum embedment depth	[kN]	9.20	12.2	16.8	17.6	25.1	31.4	42.8	59.5
Standard embedment depth	[kN]	12.3	15.7	23.0	24.2	31.4	44.5	64.1	87.1
Maximum embedment depth	[kN]	15.4	20.9	30.4	31.9	47.8	62.8	88.6	130.7
SHEAR LOAD V_{Rd}									
A-II (e.g. 18G2)	[kN]	8.00	12.6	18.1	24.6	32.2	50.3	78.5	128.7
A-III (e.g. 34GS)	[kN]	8.40	13.1	18.8	25.7	33.5	52.4	81.8	134.0
A-III-N (e.g. RB500, BST500S, B500SP)	[kN]	9.20	14.4	20.7	28.2	36.9	57.6	90.0	147.4

Basic performance data

Size		Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø25	Ø32
RECOMMENDED LOAD									
TENSION LOAD N_{rec}									
A-II (e.g. 18G2)									
Minimum embedment depth	[kN]	6.57	8.71	12.0	12.6	17.9	22.4	30.6	42.5
Standard embedment depth	[kN]	8.80	11.2	16.4	17.3	22.4	31.8	45.8	62.2
Maximum embedment depth	[kN]	11.0	14.9	21.7	22.8	34.1	44.9	63.3	93.4
A-III (e.g. 34GS)									
Minimum embedment depth	[kN]	6.57	8.71	12.0	12.6	17.9	22.4	30.6	42.5
Standard embedment depth	[kN]	8.79	11.2	16.4	17.3	22.4	31.8	45.8	62.2
Maximum embedment depth	[kN]	11.0	14.9	21.7	22.8	34.1	44.9	63.3	93.4
A-III-N (e.g. RB500, BST500S, B500SP)									
Minimum embedment depth	[kN]	6.57	8.71	12.0	12.6	17.9	22.4	30.6	42.5
Standard embedment depth	[kN]	8.79	11.2	16.4	17.3	22.4	31.8	45.8	62.2
Maximum embedment depth	[kN]	11.0	14.9	21.7	22.8	34.1	44.9	63.3	93.4
SHEAR LOAD V_{rec}									
A-II (e.g. 18G2)	[kN]	5.74	8.98	12.9	17.6	23.0	35.9	56.1	91.9
A-III (e.g. 34GS)	[kN]	5.98	9.35	13.5	18.3	23.9	37.4	58.4	95.7
A-III-N (e.g. RB500, BST500S, B500SP)	[kN]	6.58	10.3	14.8	20.2	26.3	41.1	64.3	105.3

Design performance data

REBARS AS ANCHORS Maximum embedment depth

Size			Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø25	Ø32
Effective embedment depth	h_{ef}	[mm]	100.00	120.00	145.00	145.00	190.00	240.00	290.00	360.00
TENSION LOAD										
STEEL FAILURE; A-II (E.G. 18G2)										
Characteristic resistance	$N_{Rk,s}$	[kN]	24.10	37.70	54.30	73.90	96.50	150.80	235.60	386.00
Design resistance γ_{Ms}= 1.5	$N_{Rd,s}$	[kN]	16.10	25.10	36.20	49.30	64.30	100.50	157.10	257.40
STEEL FAILURE; A-III (E.G. 34GS)										
Characteristic resistance	$N_{Rk,s}$	[kN]	25.10	39.30	56.50	77.00	100.50	157.10	245.40	402.10
Design resistance γ_{Ms}= 1.5	$N_{Rd,s}$	[kN]	16.80	26.20	37.70	51.30	67.00	104.70	163.60	268.10
STEEL FAILURE; A-III-N (E.G. RB500, BST500S, B500SP)										
Characteristic resistance	$N_{Rk,s}$	[kN]	27.60	43.20	62.20	84.70	110.60	172.80	270.00	442.30
Design resistance γ_{Ms}= 1.4	$N_{Rd,s}$	[kN]	19.70	30.90	44.40	60.50	79.00	123.40	192.80	316.00
COMBINED PULL-OUT AND CONCRETE CONE FAILURE; NON-CRACKED CONCRETE C20/25 (40°C/24°C)										
Characteristic resistance	$N_{Rk,p}$	[kN]	27.60	37.70	54.70	57.40	86.00	113.10	159.40	235.20
Design resistance γ_{Mc} = γ_{Mp}= 1.8	$N_{Rd,p}$	[kN]	15.40	20.90	30.40	31.90	47.80	62.80	88.60	130.70
COMBINED PULL-OUT AND CONCRETE CONE FAILURE; NON-CRACKED CONCRETE C20/25 (80°C/50°C)										
Characteristic resistance	$N_{Rk,p}$	[kN]	22.60	30.20	43.70	44.60	66.90	90.50	136.70	181.00
Design resistance γ_{Mc} = γ_{Mp}= 1.8	$N_{Rd,p}$	[kN]	12.60	16.80	24.30	24.80	37.10	50.30	75.90	100.50
Increasing factors for $N_{Rd,p}$ - C30/37	Ψ_c	-	1.04	1.04	1.04	1.04	1.04	1.00	1.00	1.00
Increasing factors for $N_{Rd,p}$ - C40/50	Ψ_c	-	1.07	1.07	1.07	1.07	1.07	1.00	1.00	1.00
Increasing factors for $N_{Rd,p}$ - C50/60	Ψ_c	-	1.09	1.09	1.09	1.09	1.09	1.00	1.00	1.00
Spacing	$s_{cr,N}$	[mm]	300.00	360.00	435.00	435.00	570.00	720.00	870.00	1080.00
Edge distance	$c_{cr,N}$	[mm]	150.00	180.00	217.50	217.50	285.00	360.00	435.00	540.00

Design performance data

Size			Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø25	Ø32
SHEAR LOAD										
CONCRETE EDGE FAILURE; NON-CRACKED CONCRETE C20/25										
Edge distance	c_1	[mm]	50.00	60.00	72.50	72.50	95.00	120.00	145.00	180.00
Characteristic resistance for c_1	$V_{Rk,c}$	[kN]	7.80	10.80	15.00	15.50	23.80	35.30	49.20	71.80
Design resistance γ_{Mc}= 1.5	$V_{Rd,c}$	[kN]	5.20	7.20	10.00	10.40	15.80	23.60	32.80	47.80
STEEL FAILURE; A-II (E.G. 18G2)										
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	12.10	18.80	27.10	36.90	48.30	75.40	117.80	193.00
Design resistance γ_{Ms}= 1.5	$N_{Rd,s}$	[kN]	8.00	12.60	18.10	24.60	32.20	50.30	78.50	128.70
STEEL FAILURE; A-III (E.G. 34GS)										
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	12.60	19.60	28.30	38.50	50.30	78.50	122.70	201.10
Design resistance γ_{Ms}= 1.5	$N_{Rd,s}$	[kN]	8.40	13.10	18.80	25.70	33.50	52.40	81.80	134.00
STEEL FAILURE; A-III-N (E.G. RB500, BST500S, B500SP)										
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	13.80	21.60	31.10	42.30	55.30	86.40	135.00	221.20
Design resistance γ_{Ms}= 1.5	$N_{Rd,s}$	[kN]	9.20	14.40	20.70	28.20	36.90	57.60	90.00	147.40

Reduction / increasing resistance factors for edge distance and spacing

Edge distance (tension)

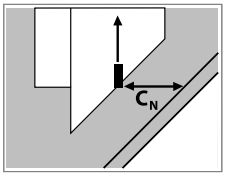


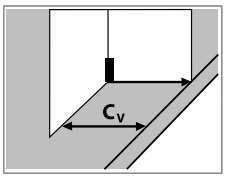
Table only valid for one edge $<C_{cr,N}$ and $S \geq S_{cr,N}$ For other cases use the Rawlplug Anchor Calculator

Reduction factors for edge distance $<C_{cr,N}$ applicable to N_{Rd} or N_{rec} for cracked and non-cracked concrete from 'Basic Performance' table

c_N [mm]	Ø8		Ø10		Ø12		Ø14		Ø16		Ø20		Ø25		Ø32	
	$h \geq 1.33h_{min}$	h_{min}	$h \geq 1.37h_{min}$	h_{min}	$h \geq 1.37h_{min}$	h_{min}	$h \geq 1.37h_{min}$	h_{min}	$h \geq 1.38h_{min}$	h_{min}	$h \geq 1.39h_{min}$	h_{min}	$h \geq 1.39h_{min}$	h_{min}	$h \geq 1.39h_{min}$	h_{min}
50	0,65	0,51														
60	0,72	0,55	0,65	0,51												
73	0,80	0,60	0,73	0,55	0,66	0,54	0,62	0,53								
95	0,91	0,69	0,85	0,62	0,76	0,60	0,72	0,59	0,67	0,54						
100	0,93	0,70	0,88	0,64	0,79	0,62	0,74	0,60	0,68	0,55						
120	0,99	0,74	0,96	0,70	0,90	0,68	0,83	0,66	0,76	0,60	0,70	0,59				
140	1,00	0,78	1,00	0,73	1,00	0,74	0,93	0,72	0,85	0,64	0,77	0,63				
145		0,79		0,74		0,75	0,96	0,74	0,87	0,65	0,79	0,64	0,76	0,59		
165		0,83		0,78		0,78	1,00	0,78	0,95	0,70	0,86	0,69	0,81	0,62		
180		0,86		0,80		0,81		0,81	1,00	0,74	0,92	0,73	0,87	0,65	0,73	0,60
200		0,90		0,83		0,84		0,84		0,76	1,00	0,78	0,95	0,69	0,78	0,63
225		0,95		0,88		0,89		0,89		0,80		0,81	1,00	0,74	0,85	0,67
265		1,00		0,94		0,96		0,96		0,85		0,87		0,80	0,96	0,73
300				1,00		1,00		1,00		0,89		0,92		0,84	1,00	0,78
360										0,97		1,00		0,91		0,83
400										1,00				0,96		0,87
450														1,00		0,92
550																1,00

Design performance data

Edge distance (shear)



Tables only valid for one edge $>c_{min}$ and $s \geq 3c_V$ For other cases use the Rawlplug Anchor Calculator

Increasing factors for edge distance $>C_{min}$ applicable to $V_{Rd,c}$ for non-cracked concrete from Design Performance table

C_V [mm]	Ø8		Ø10		Ø12		Ø14		Ø16		Ø20		Ø25		Ø32	
	$h \geq 1.5c_V$	h_{min}	$h \geq 1.5c_V$	h_{min}	$h \geq 1.5c_V$	h_{min}	$h \geq 1.5c_V$	h_{min}	$h \geq 1.5c_V$	h_{min}	$h \geq 1.5c_V$	h_{min}	$h \geq 1.5c_V$	h_{min}	$h \geq 1.5c_V$	h_{min}
50	1,00	1,00														
60	1,31	1,31	1,00	1,00												
73	1,76	1,76	1,34	1,34	1,00	1,00	1,00	1,00								
95	2,62	2,50	1,99	1,99	1,48	1,48	1,48	1,48	1,00	1,00						
100		2,63	2,15	2,15	1,60	1,60	1,60	1,60	1,08	1,08						
105					1,73	1,73	1,73	1,73	1,16	1,16						
120					2,11	2,11	2,11	2,11	1,42	1,42	1,00	1,00				
145					2,80	2,55	2,80	2,55	1,89	1,89	1,33	1,33	1,00	1,00		
180							3,87	3,17	2,61	2,43	1,84	1,84	1,38	1,38	1,00	1,00
200										2,70	2,15	2,12	1,62	1,62	1,17	1,17
230											2,65	2,44	2,00	2,00	1,44	1,44
250												2,65	2,26	2,20	1,64	1,64
300													2,98	2,64	2,15	2,13
350														3,08	2,71	2,48
400															3,31	2,84
450																3,19

Design performance data

Spacing

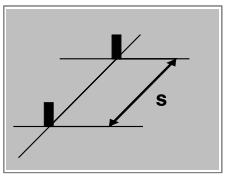


Table only valid for one spacing $<s_{cr,N}$ and $c \geq c_{cr,N}$ For other cases use the Rawlplug Anchor Calculator

Reduction factors for spacing $<S_{cr,N}$ applicable to N_{Rd} / V_{Rd} or N_{rec} / V_{rec} for non-cracked concrete from 'Basic Performance' table

s [mm]	Ø8		Ø10		Ø12		Ø14		Ø16		Ø20		Ø25		Ø32	
	h ≥ 1.33h_{min}	h_{min}	h ≥ 1.37h_{min}	h_{min}	h ≥ 1.37h_{min}	h_{min}	h ≥ 1.37h_{min}	h_{min}	h ≥ 1.38h_{min}	h_{min}	h ≥ 1.39h_{min}	h_{min}	h ≥ 1.39h_{min}	h_{min}	h ≥ 1.39h_{min}	h_{min}
50	0,63	0,55														
60	0,65	0,56	0,63	0,55												
73	0,69	0,57	0,66	0,56	0,63	0,56	0,62	0,56								
95	0,75	0,60	0,71	0,58	0,67	0,58	0,65	0,58	0,64	0,56						
100	0,76	0,60	0,72	0,58	0,68	0,59	0,66	0,59	0,64	0,57						
120	0,81	0,62	0,76	0,60	0,72	0,60	0,70	0,60	0,67	0,58	0,65	0,58				
145	0,86	0,65	0,81	0,62	0,76	0,63	0,74	0,63	0,71	0,60	0,68	0,60	0,65	0,58		
180	0,91	0,68	0,89	0,65	0,82	0,66	0,79	0,66	0,76	0,62	0,73	0,63	0,69	0,60	0,66	0,58
200	0,93	0,70	0,91	0,67	0,86	0,67	0,83	0,67	0,79	0,63	0,75	0,64	0,71	0,61	0,68	0,59
225	0,97	0,73	0,94	0,69	0,91	0,69	0,87	0,69	0,82	0,65	0,78	0,66	0,73	0,63	0,70	0,60
250	1,00	0,75	0,97	0,71	0,95	0,72	0,91	0,72	0,86	0,66	0,81	0,67	0,76	0,64	0,72	0,62
280		0,78	1,00	0,73	1,00	0,74	0,96	0,74	0,90	0,68	0,85	0,69	0,79	0,66	0,75	0,63
320		0,82		0,77		0,78	1,00	0,78	0,96	0,71	0,90	0,72	0,83	0,68	0,79	0,65
400		0,90		0,83		0,84		0,84	1,00	0,76	1,00	0,78	0,91	0,73	0,86	0,69
450		0,95		0,88		0,89		0,89		0,80		0,81	0,97	0,76	0,90	0,71
500		1,00		0,92		0,93		0,93		0,83		0,85	1,00	0,79	0,95	0,73
550				0,96		0,97		0,97		0,86		0,88		0,82	0,99	0,75
630				1,00		1,00		1,00		0,91		0,94		0,86	1,00	0,79
760										1,00		1,00		0,94		0,85
950														1,00		0,94
1100																1,00

Design performance data

Minimum embedment depth

Size			Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø25	Ø32
Effective embedment depth	h_{ef}	[mm]	60.00	70.00	80.00	80.00	100.00	120.00	140.00	165.00
TENSION LOAD										
STEEL FAILURE; A-II (E.G. 18G2)										
Characteristic resistance	$N_{Rk,s}$	[kN]	24.10	37.70	54.30	73.90	96.50	150.80	235.60	386.00
Design resistance γ_{Ms}= 1.5	$N_{Rd,s}$	[kN]	16.10	25.10	36.20	49.30	64.30	100.50	157.10	257.40
STEEL FAILURE; A-III (E.G. 34GS)										
Characteristic resistance	$N_{Rk,s}$	[kN]	25.10	39.30	56.50	77.00	100.50	157.10	245.40	402.10
Design resistance γ_{Ms}= 1.5	$N_{Rd,s}$	[kN]	16.80	26.20	37.70	51.30	67.00	104.70	163.60	268.10
STEEL FAILURE; A-III-N (E.G. RB500, BST500S, B500SP)										
Characteristic resistance	$N_{Rk,s}$	[kN]	27.60	43.20	62.20	84.70	110.60	172.80	270.00	442.30
Design resistance γ_{Ms}= 1.4	$N_{Rd,s}$	[kN]	19.70	30.90	44.40	60.50	79.00	123.40	192.80	316.00
COMBINED PULL-OUT AND CONCRETE CONE FAILURE; NON-CRACKED CONCRETE C20/25 (40°C/24°C)										
Characteristic resistance	$N_{Rk,p}$	[kN]	16.60	22.00	30.20	31.70	45.20	56.50	77.00	107.80
Design resistance γ_{Mc} = γ_{Mp}= 1.8	$N_{Rd,p}$	[kN]	9.20	12.20	16.80	17.60	25.10	31.40	42.80	59.90
COMBINED PULL-OUT AND CONCRETE CONE FAILURE; NON-CRACKED CONCRETE C20/25 (80°C/50°C)										
Characteristic resistance	$N_{Rk,p}$	[kN]	13.60	17.60	24.10	24.60	35.20	45.20	66.00	82.90
Design resistance γ_{Mc} = γ_{Mp}= 1.8	$N_{Rd,p}$	[kN]	7.50	9.80	13.40	13.70	19.50	25.10	36.70	46.10
Increasing factors for $N_{Rd,p}$ - C30/37	Ψ_c	-	1.04	1.04	1.04	1.04	1.04	1.00	1.00	1.00
Increasing factors for $N_{Rd,p}$ - C40/50	Ψ_c	-	1.07	1.07	1.07	1.07	1.07	1.00	1.00	1.00
Increasing factors for $N_{Rd,p}$ - C50/60	Ψ_c	-	1.09	1.09	1.09	1.09	1.09	1.00	1.00	1.00
Spacing	$s_{cr,N}$	[mm]	180.00	210.00	240.00	240.00	300.00	360.00	420.00	495.00
Edge distance	$c_{cr,N}$	[mm]	90.00	105.00	120.00	120.00	150.00	180.00	210.00	248.00
SHEAR LOAD										
CONCRETE EDGE FAILURE; NON-CRACKED CONCRETE C20/25										
Edge distance	c_1	[mm]	40.00	40.00	40.00	40.00	50.00	60.00	70.00	83.00
Characteristic resistance for c_1	$V_{Rk,c}$	[kN]	5.27	5.68	6.09	6.29	9.06	12.50	16.60	22.60
Design resistance γ_{Mc}= 1.5	$V_{Rd,c}$	[kN]	3.51	3.79	4.06	4.19	6.04	8.34	11.00	15.00
STEEL FAILURE; A-II (E.G. 18G2)										
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	12.10	18.80	27.10	36.90	48.30	75.40	117.80	193.00
Design resistance γ_{Ms}= 1.5	$N_{Rd,s}$	[kN]	8.00	12.60	18.10	24.60	32.20	50.30	78.50	128.70
STEEL FAILURE; A-III (E.G. 34GS)										
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	12.60	19.60	28.30	38.50	50.30	78.50	122.70	201.10
Design resistance γ_{Ms}= 1.5	$N_{Rd,s}$	[kN]	8.40	13.10	18.80	25.70	33.50	52.40	81.80	134.00
STEEL FAILURE; A-III-N (E.G. RB500, BST500S, B500SP)										
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	13.80	21.60	31.10	42.30	55.30	86.40	135.00	221.20
Design resistance γ_{Ms}= 1.5	$N_{Rd,s}$	[kN]	9.20	14.40	20.70	28.20	36.90	57.60	90.00	147.40
STEEL FAILURE										
Design resistance	$N_{Rd,s}$	-	-	-	-	-	-	-	-	-

Design performance data

Reduction / increasing resistance factors for edge distance and spacing

Edge distance (tension)

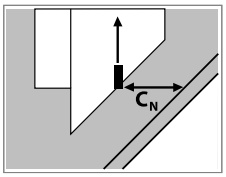


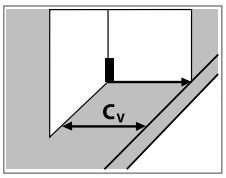
Table only valid for one edge $<C_{cr,N}$ and $S \geq S_{cr,N}$ For other cases use the Rawlplug Anchor Calculator

Reduction factors for edge distance $<C_{cr,N}$ applicable to N_{Rd} or N_{rec} for cracked and non-cracked concrete from 'Basic Performance' table

c_N [mm]	Ø8		Ø10		Ø12		Ø14		Ø16		Ø20	Ø25	Ø32
	$h \geq 1.13h_{min}$	h_{min}	$h \geq 1.25h_{min}$	h_{min}	$h \geq 1.24h_{min}$	h_{min}	$h \geq 1.24h_{min}$	h_{min}	$h \geq 1.24h_{min}$	h_{min}			
40	0,60	0,53	0,56	0,50	0,53	0,50	0,53	0,50					
50	0,65	0,58	0,62	0,54	0,58	0,54	0,58	0,54	0,53	0,50			
60	0,71	0,63	0,68	0,59	0,64	0,58	0,64	0,58	0,57	0,53	0,53		
70	0,77	0,68	0,75	0,63	0,69	0,63	0,69	0,63	0,62	0,57	0,57	0,53	
85	0,87	0,77	0,85	0,70	0,78	0,70	0,78	0,70	0,68	0,62	0,62	0,58	0,54
90	0,90	0,80	0,89	0,72	0,81	0,72	0,81	0,72	0,70	0,64	0,64	0,59	0,55
105	0,96	0,85	1,00	0,80	0,90	0,80	0,90	0,80	0,77	0,69	0,69	0,64	0,59
120	1,00	0,90		0,84	1,00	0,88	1,00	0,88	0,85	0,75	0,75	0,68	0,63
150		1,00		0,93		0,97		0,97	1,00	0,88	0,87	0,78	0,71
165				0,97		1,00		1,00		0,91	0,93	0,84	0,75
180				1,00						0,95	1,00	0,89	0,79
210										1,00		1,00	0,88
250													1,00

Design performance data

Edge distance (shear)



Tables only valid for one edge $>c_{min}$ and $s \geq 3c_V$ For other cases use the Rawlplug Anchor Calculator

Increasing factors for edge distance $>C_{min}$ applicable to $V_{Rd,c}$ for non-cracked concrete from Design Performance table

C_V [mm]	Ø8		Ø10		Ø12		Ø14		Ø16		Ø20		Ø25		Ø32	
	$h \geq 1.5c_V$	h_{min}	$h \geq 1.5c_V$	h_{min}	$h \geq 1.5c_V$	h_{min}	$h \geq 1.5c_V$	h_{min}	$h \geq 1.5c_V$	h_{min}	$h \geq 1.5c_V$	h_{min}	$h \geq 1.5c_V$	h_{min}	$h \geq 1.5c_V$	h_{min}
40	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00								
50	1,40	1,40	1,40	1,40	1,40	1,40	1,40	1,40	1,00	1,00						
60	1,84	1,84	1,84	1,84	1,84	1,84	1,84	1,84	1,31	1,31	1,00	1,00				
70	2,32	2,26	2,32	2,26	2,32	2,32	2,32	2,32	1,66	1,66	1,26	1,26	1,00	1,00		
83	2,99	2,68	2,99	2,68	2,99	2,89	2,99	2,89	2,14	2,14	1,63	1,63	1,29	1,29	1,00	1,00
90		2,90	3,38	2,90	3,38	3,13	3,38	3,13	2,41	2,41	1,84	1,84	1,46	1,46	1,13	1,13
100			3,95	3,23	3,95	3,48	3,95	3,48	2,83	2,77	2,15	2,15	1,71	1,71	1,32	1,32
120				3,87	5,20	4,17	5,20	4,17	3,72	3,33	2,83	2,76	2,24	2,24	1,74	1,74
150						5,21	7,26	5,21	5,20	4,16	3,95	3,46	3,14	2,99	2,43	2,43
165								5,74	5,99	4,57	4,56	3,80	3,62	3,29	2,80	2,79
180								6,26	6,83	4,99	5,20	4,15	4,12	3,58	3,19	3,04
210								7,30		5,82	6,55	4,84	5,20	4,18	4,02	3,55
250										6,93	8,51	5,76	6,75	4,98	5,23	4,23
300												6,91	8,87	5,97	6,87	5,07
350												8,06		6,97	8,66	5,92
400														7,96	10,58	6,76
450														8,96		7,61
500																8,45
550																9,30
600																10,14

Design performance data

Spacing

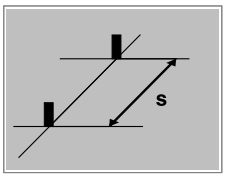


Table only valid for one spacing $<s_{cr,N}$ and $c \geq c_{cr,N}$ For other cases use the Rawlplug Anchor Calculator

Reduction factors for spacing $<S_{cr,N}$ applicable to N_{Rd} / V_{Rd} or N_{rec} / V_{rec} for non-cracked concrete from 'Basic Performance' table

s [mm]	Ø8		Ø10		Ø12		Ø14		Ø16		Ø20	Ø25	Ø32
	$h \geq 1.13h_{min}$	h_{min}	$h \geq 1.25h_{min}$	h_{min}	$h \geq 1.24h_{min}$	h_{min}	$h \geq 1.24h_{min}$	h_{min}	$h \geq 1.24h_{min}$	h_{min}			
40	0,61	0,57	0,60	0,56	0,58	0,56	0,58	0,56					
50	0,64	0,58	0,62	0,57	0,60	0,58	0,60	0,58	0,58	0,56			
60	0,67	0,60	0,64	0,59	0,63	0,59	0,63	0,59	0,60	0,58	0,58		
70	0,69	0,62	0,67	0,60	0,65	0,61	0,65	0,61	0,62	0,59	0,60	0,58	
85	0,72	0,64	0,70	0,62	0,68	0,63	0,68	0,63	0,64	0,61	0,62	0,60	0,59
100	0,75	0,67	0,74	0,64	0,71	0,66	0,71	0,66	0,67	0,63	0,64	0,62	0,60
125	0,80	0,71	0,80	0,68	0,76	0,70	0,76	0,70	0,71	0,66	0,67	0,65	0,63
150	0,85	0,75	0,86	0,71	0,81	0,73	0,81	0,73	0,75	0,69	0,71	0,68	0,65
180	0,90	0,80	0,93	0,76	0,88	0,78	0,88	0,78	0,80	0,73	0,75	0,71	0,68
200	0,94	0,83	0,98	0,79	0,92	0,81	0,92	0,81	0,83	0,75	0,78	0,74	0,70
225	0,99	0,88	1,00	0,82	0,97	0,85	0,97	0,85	0,88	0,78	0,81	0,77	0,73
250	1,00	0,92		0,86	1,00	0,89	1,00	0,89	0,92	0,81	0,85	0,80	0,75
275		0,96		0,89		0,93		0,93	0,96	0,84	0,88	0,83	0,78
300		1,00		0,93		0,97		0,97	1,00	0,88	0,92	0,86	0,80
325				0,96		1,00		1,00		0,91	0,95	0,89	0,83
360				1,00						0,95	1,00	0,93	0,86
400										1,00		0,98	0,90
440												1,00	0,94
500													1,00

Standard embedment depth

Size			Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø25	Ø32
Effective embedment depth	h_{ef}	[mm]	80.00	90.00	110.00	110.00	125.00	170.00	210.00	240.00
TENSION LOAD										
STEEL FAILURE; A-II (E.G. 18G2)										
Characteristic resistance	$N_{Rk,s}$	[kN]	24.10	37.70	54.30	73.90	96.50	150.80	235.60	386.00
Design resistance γ_{Ms}= 1.5	$N_{Rd,s}$	[kN]	16.10	25.10	36.20	49.30	64.30	100.50	157.10	257.40
STEEL FAILURE; A-III (E.G. 34GS)										
Characteristic resistance	$N_{Rk,s}$	[kN]	25.10	39.30	56.50	77.00	100.50	157.10	245.40	402.10
Design resistance γ_{Ms}= 1.5	$N_{Rd,s}$	[kN]	16.80	26.20	37.70	51.30	67.00	104.70	163.60	268.10
STEEL FAILURE; A-III-N (E.G. RB500, BST500S, B500SP)										
Characteristic resistance	$N_{Rk,s}$	[kN]	27.60	43.20	62.20	84.70	110.60	172.80	270.00	442.30
Design resistance γ_{Ms}= 1.4	$N_{Rd,s}$	[kN]	19.70	30.90	44.40	60.50	79.00	123.40	192.80	316.00
COMBINED PULL-OUT AND CONCRETE CONE FAILURE; NON-CRACKED CONCRETE C20/25 (40°C/24°C)										
Characteristic resistance	$N_{Rk,p}$	[kN]	22.10	28.30	41.50	43.50	56.50	80.10	115.50	156.80
Design resistance $\gamma_{Mc} = \gamma_{Mp}$= 1.8	$N_{Rd,p}$	[kN]	12.30	15.70	23.00	24.20	31.40	44.50	64.10	87.10
COMBINED PULL-OUT AND CONCRETE CONE FAILURE; NON-CRACKED CONCRETE C20/25 (80°C/50°C)										
Characteristic resistance	$N_{Rk,p}$	[kN]	18.10	22.60	33.20	33.90	44.00	64.10	99.00	120.60
Design resistance $\gamma_{Mc} = \gamma_{Mp}$= 1.8	$N_{Rd,p}$	[kN]	10.10	12.60	18.40	18.80	24.40	35.60	55.00	67.00
Increasing factors for $N_{Rd,p}$ - C30/37	Ψ_c	-	1.04	1.04	1.04	1.04	1.04	1.00	1.00	1.00
Increasing factors for $N_{Rd,p}$ - C40/50	Ψ_c	-	1.07	1.07	1.07	1.07	1.07	1.00	1.00	1.00
Increasing factors for $N_{Rd,p}$ - C50/60	Ψ_c	-	1.09	1.09	1.09	1.09	1.09	1.00	1.00	1.00
Spacing	$s_{cr,N}$	[mm]	240.00	270.00	330.00	330.00	375.00	510.00	630.00	720.00
Edge distance	$c_{cr,N}$	[mm]	120.00	135.00	165.00	165.00	188.00	255.00	315.00	360.00

Design performance data

Size			Ø8	Ø10	Ø12	Ø14	Ø16	Ø20	Ø25	Ø32
SHEAR LOAD										
CONCRETE EDGE FAILURE; NON-CRACKED CONCRETE C20/25										
Edge distance	c_1	[mm]	40.00	45.00	55.00	55.00	63.00	85.00	105.00	120.00
Characteristic resistance for c_1	$V_{Rk,c}$	[kN]	5.60	7.00	9.84	10.20	12.80	21.10	30.40	39.20
Design resistance γ_{Mc}= 1.5	$V_{Rd,c}$	[kN]	3.73	4.67	6.56	6.77	8.53	14.10	20.30	26.10
STEEL FAILURE; A-II (E.G. 18G2)										
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	12.10	18.80	27.10	36.90	48.30	75.40	117.80	193.00
Design resistance γ_{Ms}= 1.5	$N_{Rd,s}$	[kN]	8.00	12.60	18.10	24.60	32.20	50.30	78.50	128.70
STEEL FAILURE; A-III (E.G. 34GS)										
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	12.60	19.60	28.30	38.50	50.30	78.50	122.70	201.10
Design resistance γ_{Ms}= 1.5	$N_{Rd,s}$	[kN]	8.40	13.10	18.80	25.70	33.50	52.40	81.80	134.00
STEEL FAILURE; A-III-N (E.G. RB500, BST500S, B500SP)										
Characteristic resistance without lever arm	$V_{Rk,s}$	[kN]	13.80	21.60	31.10	42.30	55.30	86.40	135.00	221.20
Design resistance γ_{Ms}= 1.5	$N_{Rd,s}$	[kN]	9.20	14.40	20.70	28.20	36.90	57.60	90.00	147.40

Reduction / increasing resistance factors for edge distance and spacing

Edge distance (tension)

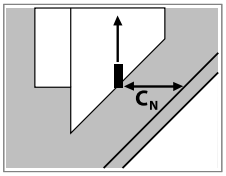


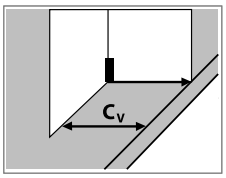
Table only valid for one edge $<C_{cr,N}$ and $S \geq S_{cr,N}$ For other cases use the Rawlplug Anchor Calculator

Reduction factors for edge distance $<C_{cr,N}$ applicable to N_{Rd} or N_{rec} for cracked and non-cracked concrete from 'Basic Performance' table

c_N [mm]	Ø8		Ø10		Ø12		Ø14		Ø16		Ø20		Ø25		Ø32	
	$h \geq 1.28h_{min}$	h_{min}	$h \geq 1.31h_{min}$	h_{min}	$h \geq 1.31h_{min}$	h_{min}	$h \geq 1.31h_{min}$	h_{min}	$h \geq 1.30h_{min}$	h_{min}	$h \geq 1.33h_{min}$	h_{min}	$h \geq 1.33h_{min}$	h_{min}	$h \geq 1.31h_{min}$	h_{min}
40	0,58	0,49														
45	0,61	0,51	0,57	0,49												
55	0,68	0,55	0,62	0,52	0,57	0,51	0,55	0,50								
63	0,74	0,59	0,67	0,55	0,61	0,54	0,58	0,53	0,55	0,51						
85	0,88	0,69	0,80	0,63	0,71	0,61	0,67	0,60	0,63	0,57	0,59	0,55				
105	0,98	0,76	0,93	0,71	0,82	0,68	0,76	0,67	0,70	0,62	0,65	0,61	0,60	0,55		
120	1,00	0,80	1,00	0,77	0,90	0,74	0,83	0,72	0,76	0,67	0,70	0,65	0,64	0,59	0,59	0,55
140		0,85	1,00	0,81	1,00	0,82	0,93	0,80	0,85	0,73	0,77	0,70	0,69	0,63	0,64	0,59
165		0,91		0,87	1,00	0,88	1,00	0,88	0,95	0,82	0,86	0,78	0,76	0,69	0,70	0,64
180		0,95		0,90		0,91		0,91	1,00	0,86	0,92	0,83	0,81	0,73	0,73	0,67
200		1,00		0,94		0,95		0,95	1,00	0,90	1,00	0,89	0,87	0,78	0,78	0,71
225				1,00		1,00		1,00		0,95	1,00	0,94	0,95	0,84	0,85	0,77
265										1,00		1,00	1,00	0,92	0,96	0,85
300														0,98	1,00	0,92
320														1,00		0,94
360																1,00

Design performance data

Edge distance (shear)



Tables only valid for one edge $>c_{min}$ and $s \geq 3c_V$ For other cases use the Rawlplug Anchor Calculator

Increasing factors for edge distance $>C_{min}$ applicable to $V_{Rd,c}$ for non-cracked concrete from Design Performance table

C_V [mm]	Ø8		Ø10		Ø12		Ø14		Ø16		Ø20		Ø25		Ø32	
	$h \geq 1.5c_V$	h_{min}	$h \geq 1.5c_V$	h_{min}	$h \geq 1.5c_V$	h_{min}	$h \geq 1.5c_V$	h_{min}	$h \geq 1.5c_V$	h_{min}	$h \geq 1.5c_V$	h_{min}	$h \geq 1.5c_V$	h_{min}	$h \geq 1.5c_V$	h_{min}
40	1,00	1,00														
45	1,19	1,19	1,00	1,00												
55	1,61	1,61	1,35	1,35	1,00	1,00	1,00	1,00								
63	1,98	1,98	1,66	1,66	1,23	1,23	1,23	1,23	1,00	1,00						
85	3,10	2,88	2,60	2,52	1,92	1,92	1,92	1,92	1,57	1,57	1,00	1,00				
105		3,55	3,56	3,11	2,64	2,54	2,64	2,54	2,15	2,15	1,37	1,37	1,00	1,00		
120				3,56	3,22	2,90	3,22	2,90	2,63	2,55	1,68	1,68	1,22	1,22	1,00	1,00
150					4,50	3,63	4,50	3,63	3,67	3,18	2,34	2,33	1,71	1,71	1,40	1,40
180						4,35		4,35	4,83	3,82	3,08	2,79	2,24	2,24	1,84	1,84
225										4,78	4,31	3,49	3,14	2,83	2,57	2,50
250												3,88	3,67	3,14	3,01	2,78
300												4,66	4,83	3,77	3,95	3,33
350														4,40	4,98	3,89
400														5,02	6,09	4,44
450																5,00
500																5,56
550																6,11

Design performance data

Spacing

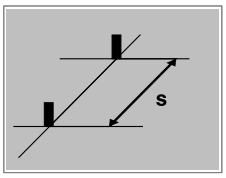


Table only valid for one spacing $<s_{cr,N}$ and $c \geq c_{cr,N}$ For other cases use the Rawlplug Anchor Calculator

Reduction factors for spacing $<S_{cr,N}$ applicable to N_{Rd} / V_{Rd} or N_{rec} / V_{rec} for non-cracked concrete from 'Basic Performance' table

s [mm]	Ø8		Ø10		Ø12		Ø14		Ø16		Ø20		Ø25		Ø32	
	$h \geq 1.28h_{min}$	h_{min}	$h \geq 1.31h_{min}$	h_{min}	$h \geq 1.31h_{min}$	h_{min}	$h \geq 1.31h_{min}$	h_{min}	$h \geq 1.30h_{min}$	h_{min}	$h \geq 1.33h_{min}$	h_{min}	$h \geq 1.33h_{min}$	h_{min}	$h \geq 1.31h_{min}$	h_{min}
40	0,60	0,55														
45	0,62	0,56	0,60	0,55												
55	0,64	0,57	0,62	0,56	0,60	0,56	0,59	0,56								
63	0,66	0,58	0,64	0,57	0,61	0,57	0,60	0,57	0,59	0,56						
85	0,72	0,61	0,68	0,59	0,65	0,60	0,64	0,60	0,62	0,59	0,61	0,58				
105	0,77	0,63	0,73	0,62	0,69	0,62	0,67	0,62	0,65	0,61	0,63	0,60	0,61	0,58		
120	0,81	0,65	0,76	0,63	0,72	0,64	0,70	0,64	0,67	0,62	0,65	0,62	0,62	0,60	0,61	0,58
150	0,88	0,69	0,82	0,67	0,77	0,67	0,74	0,67	0,71	0,65	0,69	0,65	0,66	0,62	0,63	0,60
180	0,93	0,73	0,89	0,70	0,82	0,70	0,79	0,70	0,76	0,68	0,73	0,68	0,69	0,64	0,66	0,63
200	0,96	0,75	0,93	0,72	0,86	0,73	0,83	0,73	0,79	0,70	0,75	0,70	0,71	0,66	0,68	0,64
225	1,00	0,78	0,98	0,75	0,91	0,76	0,87	0,76	0,82	0,73	0,78	0,72	0,73	0,68	0,70	0,66
280		0,85	1,00	0,81	1,00	0,82	0,96	0,82	0,90	0,78	0,85	0,77	0,79	0,72	0,75	0,69
320		0,90		0,86	1,00	0,86	1,00	0,86	0,96	0,82	0,90	0,81	0,83	0,75	0,79	0,72
400		1,00		0,94		0,95		0,95	1,00	0,90	1,00	0,89	0,91	0,82	0,86	0,78
450				1,00		1,00		1,00		0,95	0,00	0,94	0,97	0,86	0,90	0,81
500										1,00		0,99	1,00	0,90	0,95	0,85
550												1,00	1,00	0,94	0,99	0,88
630														1,00	1,00	0,94
760																1,00

Product commercial data

Size	Product Code	Volume [ml]	Quantity [pcs]			Weight [kg]			Bar Codes
			Box	Outer	Pallet	Box	Outer	Pallet	
Ø32	R-KER-280[1)]	280	10	10	840	5.7	5.7	511.4	5906675049663
	R-KER-300[1)]	300	10	10	840	6.3	6.3	559.2	5906675075167
	R-KER-345[1)]	345	10	10	840	7.1	7.1	623.3	5906675291086
	R-KER-310[1)]	310	10	10	840	6.5	6.5	573.7	5906675251851
	R-KER-380[1)]	380	10	10	560	8.2	8.2	486.6	5906675222707
	R-KER-400[1)]	400	10	10	560	8.1	8.1	483.8	5906675329444
	R-KER-300-W[1)]	300	10	10	840	6.3	6.3	559.2	5906675432021
	R-KER-380-W[1)]	380	10	10	560	8.2	8.2	486.6	5906675222981
	R-KER-400-W[1)]	400	10	10	560	8.2	8.2	489.2	5906675380445
	R-KER-380-S[1)]	380	10	10	560	6.5	6.5	391.2	5906675099088
	R-KER-400-S[1)]	400	10	10	560	8.2	8.2	489.2	5906675380452

1) ETA-13/0805