

The bonded anchor for cracked concrete with threaded rod RG M without drill hole cleaning



Crash barriers



Collision protection

VERSIONS

- Zinc-plated steel
- Stainless steel
- Highly corrosion-resistant steel
- Hot-dip galvanised steel

BUILDING MATERIALS

Approved for:

- Concrete C20/25 to C50/60, cracked and non-cracked

Also suitable for:

- Natural stone with dense structure

CERTIFICATES



Option 1 for cracked concrete



Fire resistance classification
R 120
Anchor types see test report

ADVANTAGES

- RM II is the first bonded anchor with threaded rod RG M for cracked and non-cracked concrete that does not require drill hole cleaning. This allows for a rapid working progress and an economic installation.
- Moreover, there is a reduced exposition to drill dust on the building site. This increases the safety for the user.
- The pre-portioned resin capsule is easy to install and especially suitable for individual applications and overhead installations.

APPLICATIONS

- Steel constructions
 - Guard rails
 - Staircases
 - Column bases
 - Machines
 - Masts
- Ideal for:**
- Overhead installations
 - Water-filled drill holes

FUNCTIONING

- The resin anchor RM II is suitable for pre-positioned installation when combined with the threaded rod RG M.
- The 2-component resin capsule RM II contains styrene-free vinyl ester resin and hardener.
- The threaded rod RG M is set using a hammer drill and the accompanying setting tool in rotating and hitting motions.
- During setting, the oblique edge of the RG M destroys the capsule, and mixes and activates the mortar.
- The mortar bonds the entire surface of the threaded rod with the drill hole wall and seals the drill hole.

SEE ALSO



ANCHORS + SLEEVES

Page 144



DISPENSER

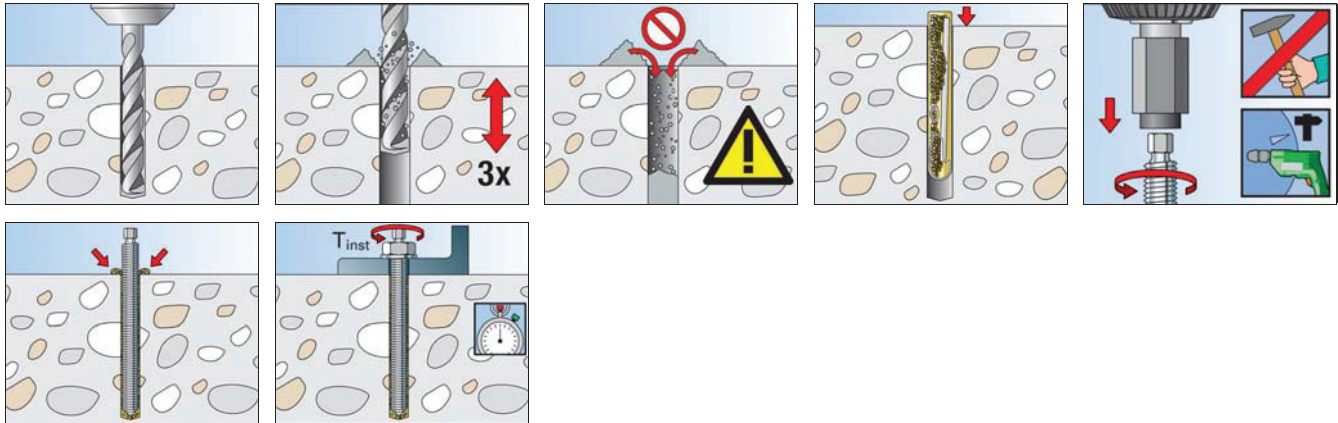
Page 195



ACCESSORIES

Page 198

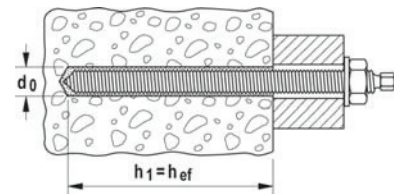
INSTALLATION IN CONCRETE WITH CAPSULE RM II AND RG M



TECHNICAL DATA



Resin capsule **RM II**



Item	Art.-No.	Approval ETA	Drill hole diameter d_0 [mm]	Min. drill hole depth h_1 [mm]	Effect. anchorage depth h_{ef} [mm]	Suitable for threaded rod	Sales unit [pcs]
RM II 8	539796	■	10	80	80	RG M 8	10
RM II 10	539797	■	12	90	90	RG M10	10
RM II 12	539798	■	14	110	110	RG M 12	10
RM II 14	539799	—	16	120	120	RG M 14	10
RM II 16	539800	■	18	125	125	RG M 16	10
RM II 20/22	539802 1)	■	25	170 / 190	170 / 190	RG M 20 / RG M 22	10
RM II 24	539803	■	28	210	210	RG M 24	5

1) RM II 20/22 in combination with RG M 22 and effect. anchorage depth of 190 mm is not part of the assessment.

CURING TIME

Temperature at anchoring base	Curing time
-15 °C - -11 °C	30 hrs.
- 10 °C - - 6 °C	16 hrs.
- 5 °C - - 1 °C	10 hrs.
+ 0 °C - + 4 °C	45 min.
+ 5 °C - + 9 °C	30 min.
+10 °C - +19 °C	20 min.
+20 °C - +29 °C	5 min.
+30 °C - +40 °C	3 min.

LOADS

Resin anchor RM II: Resin capsule RM II with Threaded rod RG M

zinc plated steel 5.8 / zinc plated steel 8.8 / stainless steel A4-70 / high corrosion resistant steel C-70

Permissible loads of a single anchor in cracked normal concrete (concrete tension zone) of strength class C20/25 (~B25) ^{1) 2) 3) 4) 8)}										Minimum spacings while reducing the load				
Type	Material fixing element	Min. member thickness	Effective anchorage depth	Maximum torque moment	Permissible tensile load	Permissible shear load	Required edge distance (with one edge) for		Required spacing for	Min. spacing	Min. edge distance			
							Max. tension load c	Max. shear load c				Max. Load s_{cr}	$s_{min}^{6)}$	$c_{min}^{6)}$
		h_{min} [mm]	h_{ef} [mm]	T_{max} [Nm]	$N_{perm}^{5)}$ [kN]	$V_{perm}^{5)}$ [kN]	[mm]	[mm]	[mm]	[mm]	[mm]			
RG M 10	5.8	120	90	20	3,9		120	8,6	155	270	45	45		
	8.8							9,4	175					
	A4-70							9,2	165					
	C-70							9,4	175					
RG M 12	5.8	140	110	40	5,8		145	12,0	195	330	55	55		
	8.8							13,8	230					
	A4-70							13,7						
	C-70							13,8						
RG M 16	5.8	170	125	60	8,7		190	325	375	375	65	65		
	8.8													
	A4-70													
	C-70													
RG M 20	5.8	220	170	120	14,8		240	34,9	450	510	85	85		
	8.8							35,6	460					
	A4-70													
RG M 24	5.8	270	210	150	22,0		285	50,9	590	630	105	105		
	8.8							52,8	615					
	A4-70													

For the design the complete assessment ETA-16/0340 has to be considered. ⁷⁾

- ¹⁾ The partial safety factors for material resistance as regulated in the ETA-16/0340 as well as a partial safety factor for load actions of $\gamma_L = 1,4$ are considered. As an single anchor counts e.g. an anchor with a spacing $s \geq 3 \cdot h_{ef}$ and an edge distance $c \geq 1,5 \cdot h_{ef}$. Accurate data see ETA-16/0340.
- ²⁾ The given loads are valid for RM II for fixations in dry and humid concrete for temperatures in the substrate up to 72 °C (resp. short term up to 120 °C in accordance with ETA-16/0340).
- ³⁾ For higher concrete strength classes up to C50/60 higher permissible loads may be possible.
- ⁴⁾ Drill method hammer drilling. For further allowable application conditions see ETA-16/0340.
- ⁵⁾ For combinations of tensile loads and shear loads or for shear loads with lever arm (bending moments) as well as reduced edge distances or spacings (anchor groups) we recommend to use our anchor design software C-FIX.
- ⁶⁾ Minimum possible axial spacings resp. edge distance while reducing the permissible load.
- ⁷⁾ The given loads refer to the European Technical Assessment ETA-16/0340, issue date 06.10.2017. Design of the loads according ETAG 001, Technical Report TR 029 (for static resp. quasi-static loads).
- ⁸⁾ A reinforcement in the concrete to prevent splitting is required. The width of the cracks has to be limited under consideration of the splitting forces at $w_k \sim 0,3$ mm.

LOADS

Resin anchor RM II: Resin capsule RM II with Threaded rod RG M

zinc plated steel 5.8 / zinc plated steel 8.8 / stainless steel A4-70 / high corrosion resistant steel C-70

Permissible loads of a single anchor in non-cracked normal concrete (concrete compression zone) of strength class C20/25 (~B25) ¹⁾²⁾³⁾⁴⁾										Minimum spacings while reducing the load		
Type	Material fixing element	Min. member thickness h_{min} [mm]	Effective anchorage depth h_{ef} [mm]	Maximum torque moment T_{max} [Nm]	Permissible tensile load $N_{perm}^{5)}$ [kN]	Permissible shear load $V_{perm}^{5)}$ [kN]	Required edge distance (with one edge) for		Required spacing for Max. Load s_{cr} [mm]	Min. spacing $s_{min}^{6)}$ [mm]	Min. edge distance $c_{min}^{6)}$ [mm]	
							Max. tension load c [mm]	Max. shear load c [mm]				
RG M 8	5.8	110	80	10	8,4	5,1	95	70	240	40	40	
	8.8											115
	A4-70											75
	C-70											100
RG M 10	5.8	120	90	20	11,8	8,6	120	105	270	45	45	
	8.8											170
	A4-70											110
	C-70											145
RG M 12	5.8	140	110	40	17,3	12,0	165	130	330	55	55	
	8.8											230
	A4-70											155
	C-70											200
RG M 16	5.8	170	125	60	26,2	22,3	260	235	375	65	65	
	8.8											405
	A4-70											270
	C-70											350
RG M 20	5.8	220	170	120	44,4	34,9	385	300	510	85	85	
	8.8											525
	A4-70											345
RG M 24	5.8	270	210	150	61,0	50,9	475	390	630	105	105	
	8.8											675
	A4-70											445

For the design the complete assessment ETA-16/0340 has to be considered. ⁷⁾

¹⁾ The partial safety factors for material resistance as regulated in the ETA-16/0340 as well as a partial safety factor for load actions of $\gamma_L = 1,4$ are considered. As an single anchor counts e.g. an anchor with a spacing $s \geq 3 \cdot h_{ef}$ and an edge distance $c \geq 1,5 \cdot h_{ef}$. Accurate data see ETA-16/0340.

²⁾ The given loads are valid for RM II for fixations in dry and humid concrete for temperatures in the substrate up to 72 °C (resp. short term up to 120 °C in accordance with ETA-16/0340).

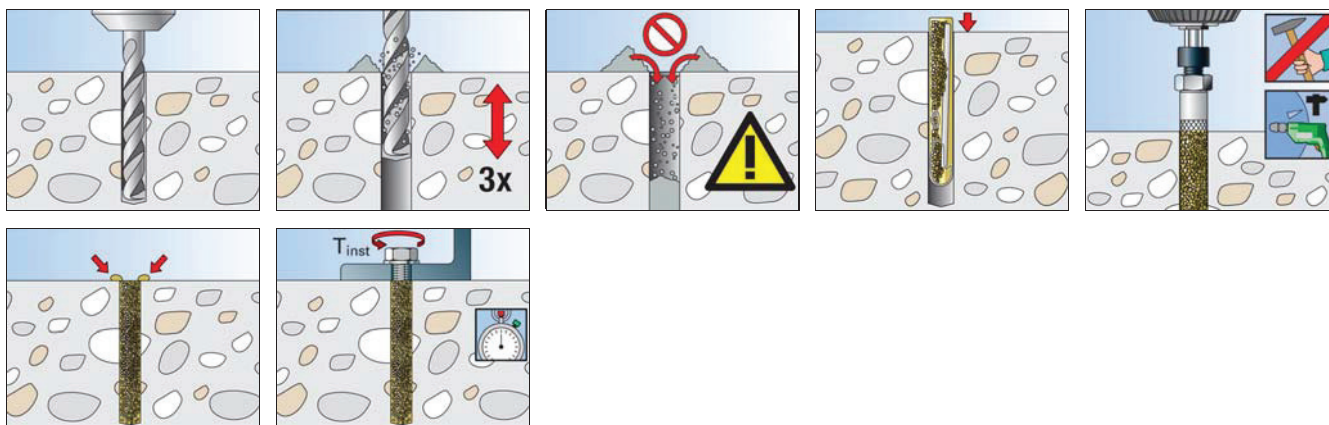
³⁾ For higher concrete strength classes up to C50/60 higher permissible loads may be possible.

⁴⁾ Drill method hammer drilling. For further allowable application conditions see ETA-16/0340.

⁵⁾ For combinations of tensile loads and shear loads or for shear loads with lever arm (bending moments) as well as reduced edge distances or spacings (anchor groups) we recommend to use our anchor design software C-FIX.

⁶⁾ The given loads refer to the European Technical Assessment ETA-16/0340, issue date 06.10.2017. Design of the loads according ETAG 001, Technical Report TR 029 (for static resp. quasi-static loads).

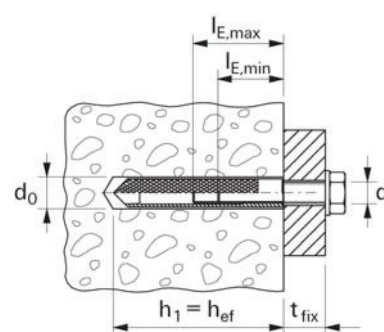
INSTALLATION IN CONCRETE WITH CAPSULE RM II AND RG M I



TECHNICAL DATA



Resin capsule RM II



Item	Art.-No.	Approval ETA	Drill diameter d_0 [mm]	Min. drill hole depth h_1 [mm]	Effect. anchorage depth h_{ef} [mm]	Suitable for internal- threaded anchor	Sales unit [pcs]
RM II 10	539797	■	14	90	90	RG M8 I	10
RM II 12	539798	■	18	90	90	RG M10 I	10
RM II 16	539800	■	20	125	125	RG M12 I	10
RM II 16 E	539801	■	24	160	160	RG M16 I	10
RM II 24	539803	■	32	200	200	RG M20 I	5

CURING TIME

Temperature at anchoring base	Curing time
-15 °C - -11 °C	30 hrs.
- 10 °C - - 6 °C	16 hrs.
- 5 °C - - 1 °C	10 hrs.
+ 0 °C - + 4 °C	45 min.
+ 5 °C - + 9 °C	30 min.
+10 °C - +19 °C	20 min.
+20 °C - +29 °C	5 min.
+30 °C - +40 °C	3 min.

LOADS

Resin anchor RM II: Resin capsule RM II with Internal threaded anchor RG M I

zinc plated steel / stainless steel A4

Permissible loads of a single anchor in cracked normal concrete (concrete tension zone) of strength class C20/25 (~B25) ^{1) 2) 3) 4) 7)}										Minimum spacings while reducing the load	
Type	Screw steel property/surface	Min. member thickness	Effective anchorage depth	Maximum torque moment	Permissible tensile load	Permissible shear load	Required edge distance (with one edge) for		Required spacing for	Min. spacing	Min. edge distance
							Max. tension load c	Max. shear load c			
		h _{min} [mm]	h _{ef} [mm]	T _{max} [Nm]	N _{perm} ⁴⁾ [kN]	V _{perm} ⁴⁾ [kN]	[mm]	[mm]	[mm]	[mm]	[mm]
RG M 8 I	5.8	120	90	10	4,7		135	85	270	55	55
	8.8							145			
	A4-70							95			
RG M 10 I	5.8	130	90	20	6,3		135	135	270	65	65
	8.8							235			
	A4-70							155			
RG M 12 I	5.8	170	125	40	9,8		190	165	375	75	75
	8.8							285			
	A4-70							185			
RG M 16 I	5.8	210	160	80	15,4		240	275	480	95	95
	8.8							405			
	A4-70							315			
RG M 20 I	5.8	270	200	120	24,4		300	385	600	125	125
	8.8							600			
	A4-70							435			

For the design the complete assessment ETA-16/0340 has to be considered.⁶⁾

¹⁾ The partial safety factors for material resistance as regulated in the ETA-16/0340 as well as a partial safety factor for load actions of $\gamma_L = 1,4$ are considered. As an single anchor counts e.g. an anchor with a spacing $s \geq 3 \cdot h_{ef}$ and an edge distance $c \geq 1,5 \cdot h_{ef}$. Accurate data see ETA-16/0340.

²⁾ For higher concrete strength classes up to C50/60 higher permissible loads may be possible.

³⁾ Drill method hammer drilling. For further allowable application conditions see ETA-16/0340.

⁴⁾ For combinations of tensile loads and shear loads or for shear loads with lever arm (bending moments) as well as reduced edge distances or spacings (anchor groups) we recommend to use our anchor design software C-FIX.

⁵⁾ Minimum possible axial spacings resp. edge distance while reducing the permissible load.

⁶⁾ The given loads refer to the European Technical Assessment ETA-16/0340, issue date 06.10.2017. Design of the loads according ETAG 001, Technical Report TR 029 (for static resp. quasi-static loads).

⁷⁾ A reinforcement in the concrete to prevent splitting is required. The width of the cracks has to be limited under consideration of the splitting forces at $w_k \sim 0,3$ mm.

LOADS

Resin anchor RM II: Resin capsule RM II with Internal threaded anchor RG M I

zinc plated steel / stainless steel A4

Permissible loads of a single anchor in non-cracked normal concrete (concrete compression zone) of strength class C20/25 (~B25) ¹⁾²⁾³⁾										Minimum spacings while reducing the load	
Type	Screw steel property/surface	Min. member thickness	Effective anchorage depth	Maximum torque moment	Permissible tensile load	Permissible shear load	Required edge distance (with one edge) for		Required spacing for	Min. spacing	Min. edge distance
							Max. tension load c	Max. shear load c			
		h_{min} [mm]	h_{ef} [mm]	T_{max} [Nm]	$N_{perm}^{4)}$ [kN]	$V_{perm}^{4)}$ [kN]	[mm]	[mm]	[mm]	[mm]	[mm]
RG M 8 I	5.8	120	90	10	9,0	5,3	85	65	270	55	55
	8.8				12,8	8,3	135	95			
	A4-70				9,9	5,9	95	70			
RG M 10 I	5.8	130	90	20	13,8	8,3	140	90	270	65	65
	8.8				17,1	13,3	190	155			
	A4-70				15,7	9,3	170	100			
RG M 12 I	5.8	170	125	40	20,5	12,1	180	110	375	75	75
	8.8				26,6	19,3	265	190			
	A4-70				22,5	13,5	210	125			
RG M 16 I	5.8	210	160	80	37,6	22,4	330	180	480	95	95
	8.8				40,6	30,9	365	265			
	A4-70					25,1		205			
RG M 20 I	5.8	270	200	120	56,7		35,4	250	600	125	125
	8.8						51,4	400			
	A4-70						39,4	285			

For the design the complete assessment ETA-16/0340 has to be considered. ⁶⁾

¹⁾ The partial safety factors for material resistance as regulated in the ETA-16/0340 as well as a partial safety factor for load actions of $\gamma_L = 1,4$ are considered. As an single anchor counts e.g. an anchor with a spacing $s \geq 3 \cdot h_{ef}$ and an edge distance $c \geq 1,5 \cdot h_{ef}$. Accurate data see ETA-16/0340.

²⁾ For higher concrete strength classes up to C50/60 higher permissible loads may be possible.

³⁾ Drill method hammer drilling. For further allowable application conditions see ETA-16/0340.

⁴⁾ For combinations of tensile loads and shear loads or for shear loads with lever arm (bending moments) as well as reduced edge distances or spacings (anchor groups) we recommend to use our anchor design software C-FIX.

⁵⁾ Minimum possible axial spacings resp. edge distance while reducing the permissible load.

⁶⁾ The given loads refer to the European Technical Assessment ETA-16/0340, issue date 06.10.2017. Design of the loads according ETAG 001, Technical Report TR 029 (for static resp. quasi-static loads).