Deutsches Institut für Bautechnik

DIBt

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European Technical Assessment Body for construction products

Designated according to Article 29 of Regulation (EU) No 305/2011 and member of EOTA (European Organisation for Technical Assessment)

European Technical Assessment ETA-25/0859 of 5 December 2025

English translation prepared by DIBt - Original version in German language

General Part

Technical Assessment Body issuing the European Technical Assessment:	Deutsches Institut für Bautechnik
Trade name of the construction product	Rotho Blaas ABS
Product family to which the construction product belongs	Mechanical fastener for use in concrete
Manufacturer	Rotho Blaas s.r.l Via dell'Adige 2/1 39040 CORTACCIA (BZ) ITALIEN
Manufacturing plant	Rotho Blaas Srl Plant C1
This European Technical Assessment contains	15 pages including 3 annexes which form an integral part of this assessment
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of	EAD 330232-02-0601

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Specific Part

1 Technical description of the product

The Rotho Blaas ABS is a fastener made of galvanised steel of sizes M6, M8, M10, M12 and M16 which is placed into a drilled hole and anchored by torque-controlled expansion.

The product description is given in Annex A.

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

The performances given in Section 3 are only valid if the fastener is used in compliance with the specifications and conditions given in Annex B.

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the fastener of at least 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 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 Mechanical resistance and stability (BWR 1)

Essential characteristic	Performance
Characteristic resistance to tension load (static and quasi static loading) Method A	See Annex B 2 and C 1
Characteristic resistance to shear load (static and quasi static loading)	See Annex C 2
Displacements	See Annex C 5
Stiffness	No performance assessed
Characteristic resistance and displacements for seismic performance categories C1 and C2	See Annex C 1, C 2 and C 5

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A1
Resistance to fire	See Annex C 3 and C 4

3.3 Aspects of durability

Essential characteristic	Performance
Durability	See Annex B 1

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

In accordance with European Assessment Documents EAD No. 330232-02-0601 the applicable European legal act is: [96/582/EC].

The system to be applied is: 1

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

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at Deutsches Institut für Bautechnik.

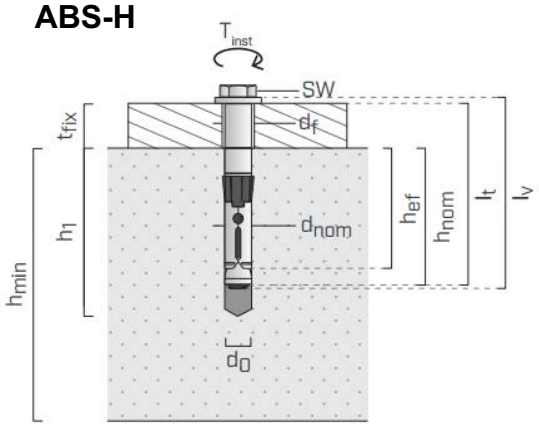
Issued in Berlin on 5 December 2025 by Deutsches Institut für Bautechnik

Dipl.-Ing. Beatrix Wittstock
Head of Section

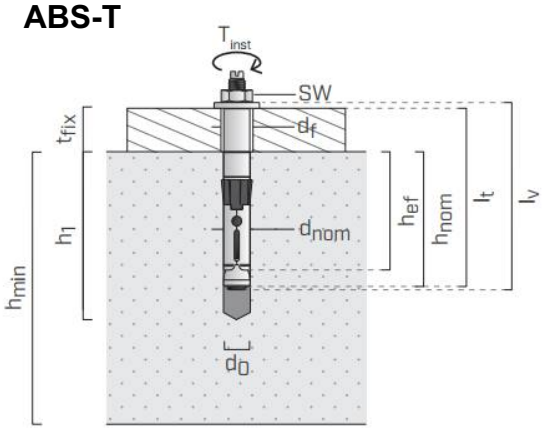
beglaubigt:
Ziegler

Installed condition

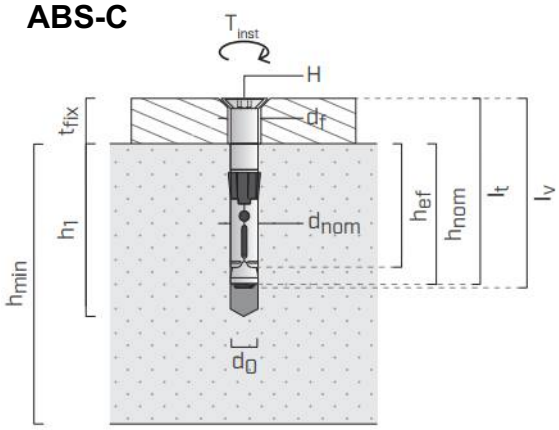
ABS-H



ABS-T



ABS-C



ABS-P

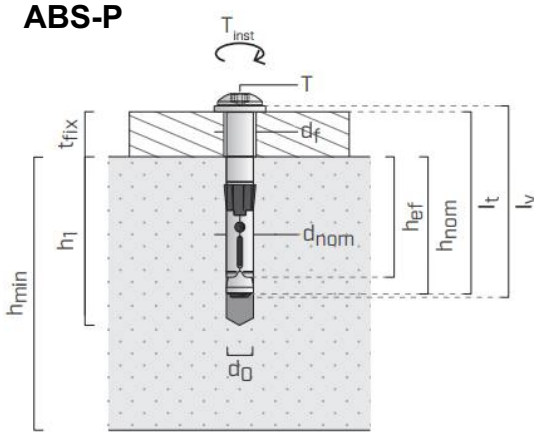


Table A1: Installation parameters

d_{nom}	Outside diameter of the anchor
t_{fix}	Thickness of the fixture
d_0	Diameter of the drill hole
d_f	Diameter of the clearance hole in the fixture
T_{inst}	Required installation torque
h_{min}	Minimum thickness of the concrete member
H	Hexagonal socket
h_{nom}	Overall anchor embedment depth
h_{ef}	Effective anchorage depth
h_1	Depth of drill hole
l_t	Anchor length
l_v	Bolt length
T	Hexalobular socket number
SW	Wrench size / Socket size

Rotho Blaas ABS

Product description
Installed condition

Annex A 1

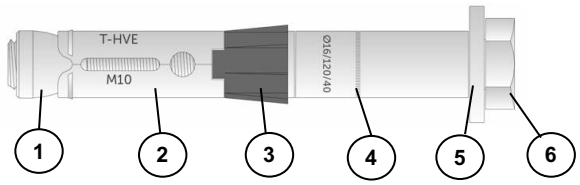
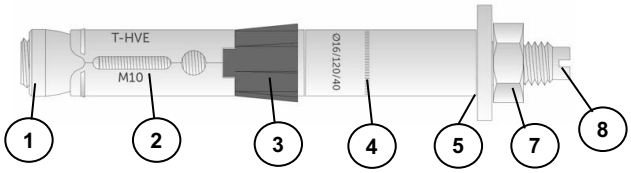
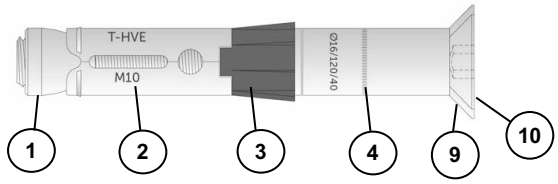
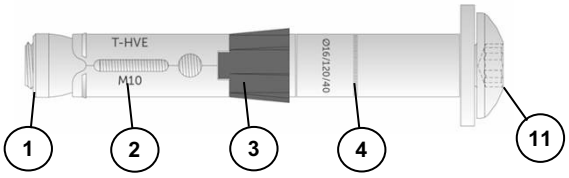
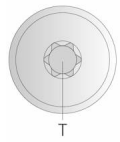
 	**ABS-H** Anchor with hexagon head screw
 	**ABS-T** Anchor with threaded stud
 	**ABS-C** Anchor with flat countersunk head screw
 	**ABS-P** Anchor with mushroom head screw

Table A2: Materials

Item	Description	Finishing
1	Conical steel nut	galvanized ≥ 5 µm according to EN ISO 4042:2022
2	Expansion steel sleeve – (marking: product name / bolt size, e.g. M10)	
3	Nylon cylinder with helix, granite grey color (or red brick color)	
4	Distance sleeve (marking: $d_{nom}/l_t/t_{fix}$, e.g. Ø16/120/40)	
5	Washer	
6	Hexagonal head bolt, class 8.8 according to EN ISO 898-1:2013	
7	Hexagonal nut, class 8 according to EN ISO 898-2:2022	
8	Threaded stud, class 8.8 according to EN ISO 898-1:2013	
9	Countersunk washer, according to EN 683-1:2018	
10	Flat countersunk head screw, class 8.8 according to EN ISO 898-1:2013	
11	Mushroom head screw, class 8.8 according to EN ISO 898-1:2013	

Rotho Blaas ABS	**Annex A 2**
Product description Anchor types and components	

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Table A3: Dimensions of anchor type ABS-H

ABS-H	Outer diameter of the anchor [mm]	Outer diameter of the metric thread [mm]	Anchor length [mm]	Range of fixture thickness [mm]
ABS-H-M6	10	6	70 - 200	5 - 135
ABS-H-M8	12	8	80 - 200	10 - 130
ABS-H-M10	16	10	90 - 200	10 - 120
ABS-H-M12	18	12	110 – 250	10 - 150
ABS-H-M16	24	16	130 – 300	10 - 180

Table A4: Dimensions of anchor type ABS-T

ABS-T	Outer diameter of the anchor [mm]	Outer diameter of the metric thread [mm]	Anchor length [mm]	Range of fixture thickness [mm]
ABS-T-M6	10	6	70 - 200	5 - 135
ABS-T-M8	12	8	80 - 200	10 - 130
ABS-T-M10	16	10	90 - 200	10 - 120
ABS-T-M12	18	12	110 – 250	10 - 150
ABS-T-M16	24	16	130 – 300	10 - 180

Table A5: Dimensions of anchor type ABS-C

ABS-C	Outer diameter of the anchor [mm]	Outer diameter of the metric thread [mm]	Anchor length [mm]	Range of fixture thickness [mm]
ABS-C-M6	10	6	70 - 205	5 - 140
ABS-C-M8	12	8	85 - 205	15 - 135
ABS-C-M10	16	10	100 - 200	20 - 120
ABS-C-M12	18	12	120 - 200	20 - 100

Table A6: Dimensions of anchor type ABS-P

ABS-P	Outer diameter of the anchor [mm]	Outer diameter of the metric thread [mm]	Anchor length [mm]	Range of fixture thickness [mm]
ABS-P-M8	12	8	80 - 200	10 - 130
ABS-P-M10	16	10	100 - 200	20 - 120

Rotho Blaas ABS

Product description
Anchor dimensions

Annex A 3

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Specifications of intended use

Anchorages subject to:

- Static or quasi-static actions: all sizes
- Seismic action for Performance Category C1 and C2: all sizes
- Resistance to fire exposure: all sizes

Base materials:

- Compacted reinforced or unreinforced normal weight concrete without fibres according to EN 206:2013+A2:2021.
- Concrete strength classes C20/25 to C50/60 according to EN 206:2013+A2:2021.
- Cracked or uncracked concrete

Use conditions (Environmental conditions):

- Structures subject to dry internal conditions

Design:

- Fastenings 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 anchored. The position of the anchor is indicated on the design drawings (e.g. position of the anchor relative to reinforcement or to supports, etc.).
- Design of fastenings according to EN 1992-4:2018
- In case of requirements to resistance to fire local spalling of the concrete cover must be avoided.

Installation:

- Hole drilling by hammer drilling
- Fastener installation carried out by appropriately qualified personnel and under the supervision of the person responsible for technical matters of the site.
- 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 hole is filled with high strength mortar and if under shear or oblique tension load it is not the direction of the load application.

Rotho Blaas ABS	**Annex B 1**
Intended use Specifications	

Table B1: Installation parameters

Parameter		ABS M6	ABS M8	ABS M10	ABS M12	ABS M16
Nominal drill hole diameter	d_o = [mm]	10	12	16	18	24
Cutting diameter of drill bit	$d_{cut} \leq$ [mm]	10,45	12,50	16,50	18,50	24,55
Effective embedment depth	h_{ef} = [mm]	55	60	70	90	105
Depth of drill hole	h_1 = [mm]	80	90	100	120	140
Diameter of clearance in the fixture	d_f = [mm]	12	14	18	20	26
Embedment depth	h_{nom} = [mm]	65	70	80	100	120
Installation torque moment	T_{inst} = [Nm]	15	30	50	100	160
Outside diameter of anchor	d_{nom} = [mm]	10	12	16	18	24
Minimum thickness of concrete member	h_{min} = [mm]	110	120	140	180	210
Minimum edge distance	c_{min} = [mm]	70	100	90	175	180
	s ≥ [mm]	110	160	175	255	290
Minimum spacing distance	s_{min} = [mm]	55	110	80	135	130
	c ≥ [mm]	110	145	120	220	240

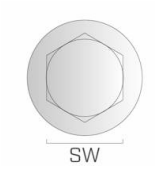
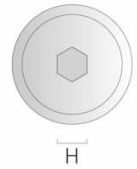
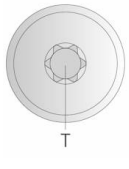
			
ABS-H	**ABS-T**	**ABS-C**	**ABS-P**

Table B2: Wrenches and maximum thickness of fixture

Anchor type		ABS M6	ABS M8	ABS M10	ABS M12	ABS M16
ABS-H – Wrench size	SW = [mm]	10	13	17	19	24
Thickness of fixture	$t_{fix,max}$ = [mm]	55	70	80	100	100
	$t_{fix,min}$ = [mm]	5	10	20	20	20
ABS-T – Wrench size	SW = [mm]	10	13	17	19	24
Thickness of fixture	$t_{fix,max}$ = [mm]	55	70	80	100	100
	$t_{fix,min}$ = [mm]	5	10	20	20	20
ABS-C – Hexagonal socket size	H = [mm]	4	5	6	8	-[1)]
Thickness of fixture	$t_{fix,max}$ = [mm]	60	55	50	100	-[1)]
	$t_{fix,min}$ = [mm]	20	15	30	20	-[1)]
ABS-P – Hexalobular socket number	T = [-]	-[1)]	40	40	-[1)]	-[1)]
Thickness of fixture	$t_{fix,max}$ = [mm]	-[1)]	50	40	-[1)]	-[1)]
	$t_{fix,min}$ = [mm]	-[1)]	10	20	-[1)]	-[1)]

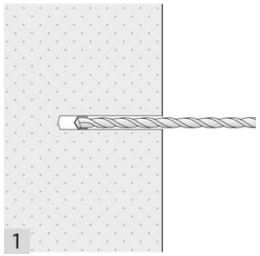
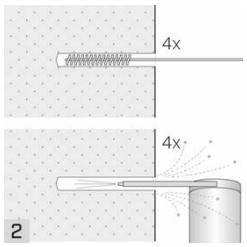
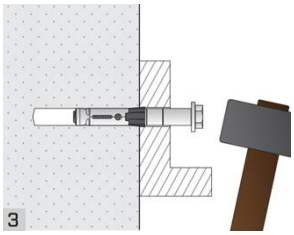
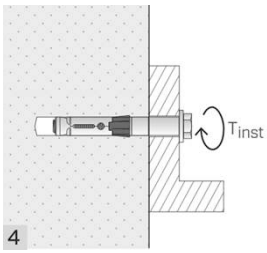
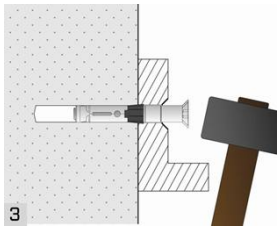
[1)] Anchor type not part of the ETA

Rotho Blaas ABS

Intended use
Installation parameters

Annex B 2

Installation instructions

ABS-H ABS-T ABS-C ABS-P	ABS-H ABS-T ABS-C ABS-P	ABS-H ABS-T ABS-P	ABS-H ABS-T ABS-C ABS-P
			
		ABS-C 	

Step 1	Drill a hole into the concrete with hammer drilling mode
Step 2	Remove the dust into the hole using a brush 4 times and a blowing pump 4 times
Step 3	Place the fixture and hammer the anchor in the drill hole
Step 4	Apply the required torque moment

Rotho Blaas ABS	**Annex B 3**
Intended use Installation instructions	

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Table C1: Design method A, characteristic values of tension resistance under static and quasi-static actions and under seismic actions performance category C1 and C2

Anchor ABS			**M6**	**M8**	**M10**	**M12**	**M16**
Steel failure							
Characteristic resistance	$N_{Rk,s}$ $N_{Rk,s,C1}$ $N_{Rk,s,C2}$	[kN]	16	29	46	67	125
Partial factor	γ_{Ms} 1)		1,5				
Pull-out failure							
Effective embedment depth	h_{ef}	[mm]	55	60	70	90	105
Characteristic resistance in uncracked concrete C20/25	$N_{Rk,p,ucr}$	[kN]	16	16	20	35	45
Characteristic resistance in cracked concrete C20/25	$N_{Rk,p,cr}$	[kN]	5	6	16	25	35
Characteristic resistance for seismic performance category C1	$N_{Rk,p,C1}$	[kN]	5	4,2	14,4	25	35
Characteristic resistance for seismic performance category C2	$N_{Rk,p,C2}$	[kN]	3,9	4,2	11,7	18,5	31
Increasing factors for cracked and uncracked concrete $N_{Rk,p} = \Psi_c \bullet N_{Rk,p}$ (C20/25)	Ψ_c	C30/37	1,22				
		C40/50	1,41				
		C50/60	1,58				
Concrete cone failure							
Effective embedment depth	h_{ef}	[mm]	55	60	70	90	105
Factor for uncracked concrete	$k_{ucr,N}$	[-]	11,0 3)				
Factor for cracked concrete	$k_{cr,N}$	[-]	7,7 3)				
Spacing (Concrete cone failure)	$s_{cr,N}$	[mm]	165	180	210	270	315
Edge distance (Concrete cone failure)	$c_{cr,N}$	[mm]	85	90	105	135	160
Splitting failure							
Characteristic resistance in concrete C20/25	$N^0_{Rk,sp}$	[kN]	min ($N_{Rk,p}$; $N^0_{Rk,c}$ 2))				
Spacing (Splitting)	$s_{cr,sp}$	[mm]	220	320	240	370	390
Edge distance (Splitting)	$c_{cr,sp}$	[mm]	110	160	120	185	195
Installation factor	γ_{inst}	[-]	1,0				

1) In absence of other national regulations.
2) $N^0_{Rk,c}$ according to EN 1992-4:2018
3) Based on compressive strength of concrete cylinders.

Rotho Blaas ABS

Annex C 1

Performance
Characteristic values of tension resistance under static and quasi-static actions and under seismic actions (performance category C1 and C2)

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Table C2: Design method A, characteristic values of shear resistance under static and quasi-static actions and under seismic actions performance category C1 and C2

Anchor ABS			M6	M8	M10	M12	M16
Steel Failure without lever arm							
Characteristic shear resistance	$V^0_{Rk,s}$	[kN]	16	25	43	58	107
Characteristic shear resistance for seismic performance category C1	$V_{Rk,s,C1}$	[kN]	11,4	17	28	43,5	96,3
Characteristic shear resistance for seismic performance category C2	$V_{Rk,s,C2}$	[kN]	6,0	10,7	23,2	40,6	74,9
Partial factor	γ_{Ms} $= \gamma_{Ms,C1}$ $= \gamma_{Ms,C2}$ [1)]	[-]	1,45				
Steel Failure with lever arm							
Characteristic bending resistance	$M^0_{Rk,s}$	[Nm]	12	30	60	105	266
Ductility factor	k_7	[-]	0,8				
Partial factor	γ_{Ms} [1)]	[-]	1,45				
Concrete pryout failure							
Pryout-factor	k_8	[-]	1,0	2,0	2,0	2,0	2,0
Concrete edge failure							
Effective anchorage length	l_f	[mm]	55	60	70	90	105
Effective external diameter anchor	d_{nom}	[mm]	10	12	16	18	24

[1)] In absence of other national regulations.

Rotho Blaas ABS

Annex C 2

Performance
Characteristic values of tension resistance under static and quasi-static actions and under seismic actions (performance category C1 and C2)

Table C3: Characteristic values of tension resistance under fire

Duration of fire resistance = 30min			**M6**	**M8**	**M10**	**M12**	**M16**
Steel Failure							
Characteristic resistance	$N_{Rk,s,fi(30)}$	[kN]	0,2	0,4	0,9	1,7	3,1
Pull-out failure							
Characteristic resistance	$N_{Rk,p,fi(30)}$	[kN]	1,3	1,5	4,0	6,3	8,8
Concrete cone failure							
Characteristic resistance	$N_{Rk,c,fi(30)}$	[kN]	4,0	5,0	7,4	13,8	20,3
Duration of fire resistance = 60min			**M6**	**M8**	**M10**	**M12**	**M16**
Steel Failure							
Characteristic resistance	$N_{Rk,s,fi(60)}$	[kN]	0,2	0,3	0,8	1,3	2,4
Pull-out failure							
Characteristic resistance	$N_{Rk,p,fi(60)}$	[kN]	1,3	1,5	4,0	6,3	8,8
Concrete cone failure							
Characteristic resistance	$N_{Rk,c,fi(60)}$	[kN]	4,0	5,0	7,4	13,8	20,3
Duration of fire resistance = 90min			**M6**	**M8**	**M10**	**M12**	**M16**
Steel Failure							
Characteristic resistance	$N_{Rk,s,fi(90)}$	[kN]	0,1	0,3	0,6	1,1	2,0
Pull-out failure							
Characteristic resistance	$N_{Rk,p,fi(90)}$	[kN]	1,3	1,5	4,0	6,3	8,8
Concrete cone failure							
Characteristic resistance	$N_{Rk,c,fi(90)}$	[kN]	4,0	5,0	7,4	13,8	20,8
Duration of fire resistance = 120min			**M6**	**M8**	**M10**	**M12**	**M16**
Steel Failure							
Characteristic resistance	$N_{Rk,s,fi(120)}$	[kN]	0,1	0,2	0,5	0,8	1,6
Pull-out failure							
Characteristic resistance	$N_{Rk,p,fi(120)}$	[kN]	1,0	1,2	3,2	5,0	7,0
Concrete cone failure							
Characteristic resistance	$N_{Rk,c,fi(120)}$	[kN]	3,2	4,0	5,9	11,1	16,3

Edge distance and spacing R30 – R120			
Spacing	$s_{cr,N}$	[mm]	4 h_{ef}
	s_{min}	[mm]	According toTable B1
Edge distance	$c_{cr,N}$	[mm]	2 h_{ef}
	c_{min}	[mm]	Fire attack from more than one side: ≥ 300 mm or ≥ 2 h_{ef}

In absence of other national regulations the partial safety factor for resistance under fire exposure $\gamma_{M,fi}$ = 1,0 is recommended.

Rotho Blaas ABS

Performance
Characteristic values of tension resistance under fire exposure

Annex C 3

Table C4: Characteristic values of shear resistance under fire

Duration of fire resistance = 30min				**M6**	**M8**	**M10**	**M12**	**M16**
Shear load without lever arm								
Characteristic resistance		$V_{Rk,s,fi(30)}$	[kN]	0,3	0,5	1,2	2,1	3,9
Shear load with lever arm								
Characteristic bending resistance		$M^0_{Rk,s,fi(30)}$	[Nm]	0,2	0,4	1,1	2,6	6,7
Duration of fire resistance = 60min				**M6**	**M8**	**M10**	**M12**	**M16**
Shear load without lever arm								
Characteristic resistance		$V_{Rk,s,fi(60)}$	[kN]	0,3	0,4	1,0	1,6	2,9
Shear load with lever arm								
Characteristic bending resistance		$M^0_{Rk,s,fi(60)}$	[Nm]	0,1	0,3	1,0	2,0	5,0
Duration of fire resistance = 90min				**M6**	**M8**	**M10**	**M12**	**M16**
Shear load without lever arm								
Characteristic resistance		$V_{Rk,s,fi(90)}$	[kN]	0,2	0,3	0,8	1,4	2,5
Shear load with lever arm								
Characteristic bending resistance		$M^0_{Rk,s,fi(90)}$	[Nm]	0,1	0,3	0,8	1,7	4,3
Duration of fire resistance = 120min				**M6**	**M8**	**M10**	**M12**	**M16**
Shear load without lever arm								
Characteristic resistance		$V_{Rk,s,fi(120)}$	[kN]	0,2	0,2	0,6	1,0	1,9
Shear load with lever arm								
Characteristic bending resistance		$M^0_{Rk,s,fi(120)}$	[Nm]	0,1	0,2	0,6	1,3	3,3
Concrete pryout failure								
Pryout-Factor		k_8	[-]	1,0	2,0	2,0	2,0	2,0
Characteristic resistance in concrete > C20/25	R30 – R90	$V_{Rk,cp,fi}$	[kN]	$k_8 \bullet N_{Rk,c,fi(90)}$ [1)]				
	R120	$V_{Rk,cp,fi}$	[kN]	$k_8 \bullet N_{Rk,c,fi(120)}$ [1)]				
Concrete edge failure								
Concrete edge failure $V^0_{Rk,c,fi}$ in concrete C20/25 to C50/60 under fire exposure is determined as follows: $V^0_{Rk,c,fi(90)} = 0,25 \times V^0_{Rk,c}$ (≤ R90) $V^0_{Rk,c,fi(120)} = 0,20 \times V^0_{Rk,c}$ (R120) with $V^0_{Rk,c}$ = initial value of the characteristic resistance in cracked concrete C20/25 under normal temperature								

[1)] $N_{Rk,c,fi(90)}$ and $N_{Rk,c,fi(120)}$ see Annex C3 with $N^0_{Rk,c,fi}$ under fire exposure for 90 or 120 minutes respectively

In absence of other national regulations the partial safety factor for resistance under fire exposure $\gamma_{M,fi}$ = 1,0 is recommended.

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Performance
Characteristic values of shear resistance under fire exposure

Annex C 4

Table C5: Displacements

Tension loads in cracked and uncracked concrete			**M6**	**M8**	**M10**	**M12**	**M16**
Service tension load in uncracked concrete C20/25	N	[kN]	7,6	7,6	9,5	16,7	21,4
Displacements	δ_{N0}	[mm]	1,3	1,5	1,0	1,3	1,8
	$\delta_{N\infty}$	[mm]	1,3	1,5	1,0	1,3	1,8
Service tension load in cracked concrete C20/25	N	[kN]	2,4	2,9	7,6	11,9	16,7
Displacements	δ_{N0}	[mm]	1,0	0,7	1,0	1,2	1,5
	$\delta_{N\infty}$	[mm]	1,6	1,3	1,6	1,7	1,5
Shear loads in cracked and uncracked concrete			**M6**	**M8**	**M10**	**M12**	**M16**
Service shear load in cracked and uncracked concrete C20/25	V	[kN]	7,7	12,3	21,0	23,3	52,5
Displacements	δ_{V0}	[mm]	2,4	2,6	2,5	3,0	4,0
	$\delta_{V\infty}$	[mm]	3,6	3,9	3,8	4,5	6,0
Displacements for seismic performance category C2							
Damage limit state							
Tension load	$\delta_{N,C2(DLS)}$	[mm]	5,56	5,24	4,23	5,39	6,74
Shear load	$\delta_{V,C2(DLS)}$	[mm]	3,18	5,74	5,12	5,98	6,93
Ultimate limit state							
Tension load	$\delta_{N,C2(ULS)}$	[mm]	22,70	17,65	14,50	16,03	20,59
Shear load	$\delta_{V,C2(ULS)}$	[mm]	4,82	11,02	9,37	9,42	12,96

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Performance
Displacements

Annex C 5