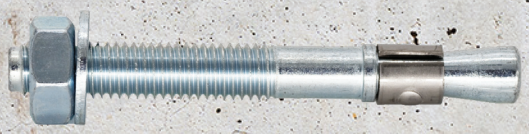
BA

WEDGE ANCHOR

REVISION R02.00 16.02.2021



NOTE: THIS TECHNICAL DATA SHEET REPLACES ALL PREVIOUS VERSIONS. THE INSTRUCTIONS IN THIS DOCUMENTATION ARE BASED ON OUR TESTS AND EXPERIENCE AND HAVE BEEN PREPARED TO THE BEST OF OUR KNOWLEDGE AND CONSCIENCE. DUE TO THE VARIETY OF DIFFERENT MATERIALS AND SUBSTRATES AND THE MANY DIFFERENT POSSIBLE APPLICATIONS BEYOND OUR CONTROL, WE ASSUME NO REPONSIBILITY FOR THE RESULTS ACHIEVED. SINCE THE CONSTRUCTION AND NATURE OF THE SUBSTRATE AND THE PROCESSING CONDITIONS ARE BEYOND OUR CONTROL, WE DO NOT ACCEPT ANY LIABILITY FOR THIS PUBLICATION. IN ANY CASE, IT IS RECOMMENDED TO CARRY OUT APPROPRIATE TESTS BEFORE USE.

CHEMOFAST®

Hanns-Martin-Schleyer-Str. 23
D-47877 Willich

Telehpone 0 21 54/81 23-0
Fax 0 21 54/81 23-3 26

www.chemofast.de
info@chemofast.de

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Application in non-cracked concrete

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1. General

Product description

The tried and tested wedge anchor BA with European Technical Assessment, Option 7, is ideal for time-saving through fastenings in non-cracked concrete.
The flexibilitie of applications is ensured by the two effective anchorage dephts of the anchor and reduces the reinforcement contact during the anchor installation.
The long threaded section on the upper part of the anchor allows stand-off fastenings also.
The hot dip galvanised version is also included in the European Technical Assessment, like the BA-U version with the extra large washer for timber structures.

Properties and benefits

- Approved for use in non-cracked concrete
- Very high load limits and small spacings and edge distances
- Two effective anchorage depths for greater flexibility
- The smaller effective anchorage depth helps to reduce drilling and installation time
- The standard effective anchorage depth is suitable for fastenings under the highest load limits and small spacings and edge distances
- Particularly cost effective: shorter lengths with only one (smaller) anchorage depth
- Suitable for surface, through and stand-off fastenings
- All sizes covered by the European Technical Assessment are assembled with a stainless steel expansion clip
- An impact head protects the thread from damage when it is driven into the drilled hole

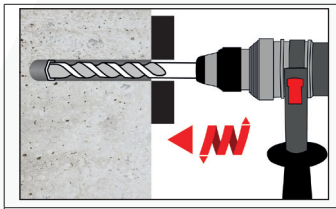
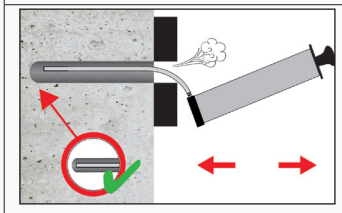
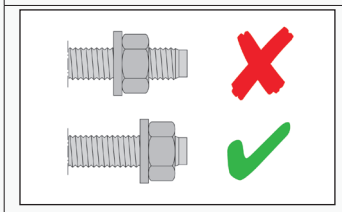
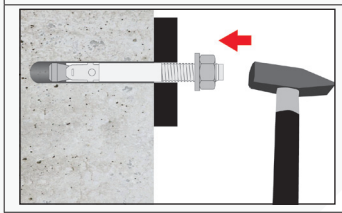
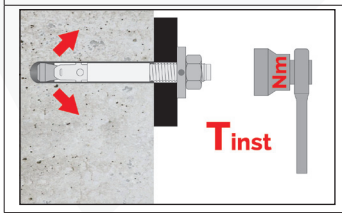
Applications samples

Suitable for the fixation of wood or metal constructions, like:

- wooden beams
- metal profils
- ducts
- brackets
- supports
- consoles
- railings
- cable trays
- piping
- etc.

2. Anchorage in concrete

Installation instructions

	**1.** Drill hole perpendicular to concrete surface, positioning of the drill holes without damaging the reinforcement.
	**2.** Blow out dust.
	**3.** Check position of nut.
	**4.** Drive in anchor, such that h_{ef} or $h_{ef,red}$ is met. This is ensured, if the thickness of fixture is not greater than the maximum thickness of fixture marked on the anchor.
	**5.** Apply installation torque T_{inst} as specified in the tables of the "Recomended loads" for each anchor version.

Installation tools

Hand pump

Torque wrench (calibrated)

Setting tool

3. BA - Steel, zinc plated

Installation and packaging data

	Standard anchorage depth				Reduced anchorage depth							
Description	max. Fix-ture thick-ness	Drill hole Ø x depth	Set-ting epth h_{nom}	Ancho-rage depth h_{ef}	max. Fixture thick-ness $t_{fix,red}$	Drill hole Ø x depth	Setting depth $h_{nom,red}$	Ancho-rage depth $h_{ef,red}$	An-chor-len-gth	Thread	pi-eces. per pkg.	weight per pkg.
[-]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[pcs]	[kg]
6-5/40[1)]	-	-	-	-	5	6x35	27	18	40	M6x16	100	1,05
6-5/52	-	-	-	-	5	6x45	39	30	52	M6x20	100	1,26
6-10-20/67	10	6x55	49	40	20	6x45	39	30	67	M6x30	100	1,55
6-15-25/72	15	6x55	49	40	25	6x45	39	30	72	M6x35	100	1,63
6-25-35/82	25	6x55	49	40	35	6x45	39	30	82	M6x35	100	1,81
6-40-50/97	40	6x55	49	40	50	6x45	39	30	97	M6x35	100	2,07
8-5/50[1)]	-	-	-	-	5	8x45	35	24	50	M8x22	100	2,32
8-4/60	-	-	-	-	4	8x55	47	35	60	M8x25	100	2,62
8-10-19/75	10	8x65	56	44	19	8x55	47	35	75	M8x40	100	3,10
8-15-24/80	15	8x65	56	44	24	8x55	47	35	80	M8x45	100	3,26
8-20-29/85	20	8x65	56	44	29	8x55	47	35	85	M8x50	100	3,40
8-25-34/90	25	8x65	56	44	34	8x55	47	35	90	M8x55	100	3,59
8-30-39/95	30	8x65	56	44	39	8x55	47	35	95	M8x60	100	3,72
8-35-44/100	35	8x65	56	44	44	8x55	47	35	100	M8x65	100	3,89
8-45-54/110	45	8x65	56	44	54	8x55	47	35	110	M8x75	100	4,22
8-55-64/120	55	8x65	56	44	64	8x55	47	35	120	M8x85	100	4,54
8-100-109/165	100	8x65	56	44	109	8x55	47	35	165	M8x85	50	2,99
10-10/60[1)]	-	-	-	-	10	10x50	40	25	60	M10x25	50	2,29
10-10-16/85	10	10x70	62	48	16	10x65	56	42	85	M10x40	50	2,83
10-15-21/90	15	10x70	62	48	21	10x65	56	42	90	M10x45	50	2,94
10-20-26/95	20	10x70	62	48	26	10x65	56	42	95	M10x50	50	3,06
10-30-36/105	30	10x70	62	48	36	10x65	56	42	105	M10x60	50	3,32
10-45-51/120	45	10x70	62	48	51	10x65	56	42	120	M10x75	50	3,72
10-50-56/125	50	10x70	62	48	56	10x65	56	42	125	M10x80	50	3,85
10-70-76/145	70	10x70	62	48	76	10x65	56	42	145	M10x80	50	4,35
10-100-106/175	100	10x70	62	48	106	10x65	56	42	175	M10x80	50	5,10
10-140-146/215	140	10x70	62	48	146	10x65	56	42	215	M10x80	25	3,06
12-5/75[1)]	-	-	-	-	5	12x65	55	38	75	M12x30	25	1,98
12-13/95	-	-	-	-	13	12x75	67	50	95	M12x50	25	2,33
12-10-25/105	10	12x90	82	65	25	12x75	67	50	105	M12x60	25	2,55
12-15-30/110	15	12x90	82	65	30	12x75	67	50	110	M12x65	25	2,60
12-20-35/115	20	12x90	82	65	35	12x75	67	50	115	M12x70	25	2,70
12-30-45/125	30	12x90	82	65	45	12x75	67	50	125	M12x80	25	2,88
12-50-65/145	50	12x90	82	65	65	12x75	67	50	145	M12x100	25	3,26

[1)] Not part of assessment, expansion clip steel, zinc plated.

	Standard anchorage depth				Reduced anchorage depth							
Description	max. Fix-ture thick-ness	Drill hole Ø x depth	Set-ting epth h_{nom}	Ancho-rage depth h_{ef}	max. Fixture thick-ness $t_{fix,red}$	Drill hole Ø x depth	Setting depth $h_{nom,red}$	Ancho-rage depth $h_{ef,red}$	An-chor-len-gth	Thread	pi-eces. per pkg.	weight per pkg.
[-]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[pcs]	[kg]
12-65-80/160	65	12x90	82	65	80	12x75	67	50	160	M12x100	25	3,49
12-85-100/180	85	12x90	82	65	100	12x75	67	50	180	M12x100	25	3,90
12-105-120/200	105	12x90	82	65	120	12x75	67	50	200	M12x100	25	4,22
12-125-140/220	125	12x90	82	65	140	12x75	67	50	220	M12x80	25	5,04
12-145-160/240	145	12x90	82	65	160	12x75	67	50	240	M12x80	20	4,38
12-160-175/255	160	12x90	82	65	175	12x75	67	50	255	M12x80	20	4,68
12-190-205/285	190	12x90	82	65	205	12x75	67	50	285	M12x80	20	5,21
12-230-245/325	230	12x90	82	65	245	12x75	67	50	325	M12x80	20	5,90
12-260-275/355	260	12x90	82	65	275	12x75	67	50	355	M12x80	20	6,53
16-5/90[1)]	-	-	-	-	5	16x75	65	47	90	M16x35	20	3,32
16-13/115	-	-	-	-	13	16x95	84	64	115	M16x60	20	3,98
16-10-28/130	10	16x110	102	82	28	16x95	84	64	130	M16x70	20	4,50
16-30-48/150	30	16x110	102	82	48	16x95	84	64	150	M16x90	20	4,87
16-60-78/180	60	16x110	102	82	78	16x95	84	64	180	M16x110	20	5,66
16-80-98/200	80	16x110	102	82	98	16x95	84	64	200	M16x110	10	3,12
16-100-118/220	100	16x110	102	82	118	16x95	84	64	220	M16x80	10	3,64
16-130-148/250	130	16x110	102	82	148	16x95	84	64	250	M16x80	10	4,10
16-165-183/285	165	16x110	102	82	183	16x95	84	64	285	M16x80	10	4,68
16-200-218/320	200	16x110	102	82	218	16x95	84	64	320	M16x80	10	5,23
20-10/120[1)]	-	-	-	-	10	20x100	90	67	120	M20x50	10	3,17
20-5-27/150	5	20x130	121	100	27	20x110	99	78	150	M20x70	10	3,78
20-20-42/165	20	20x130	121	100	42	20x110	99	78	165	M20x70	10	4,12
20-35-57/180	35	20x130	121	100	57	20x110	99	78	180	M20x70	10	4,44
20-60-82/205	60	20x130	121	100	82	20x110	99	78	205	M20x70	10	4,94
20-95-117/240	95	20x130	121	100	117	20x110	99	78	240	M20x70	10	6,10
20-120-142/265	120	20x130	121	100	142	20x110	99	78	265	M20x70	10	6,65

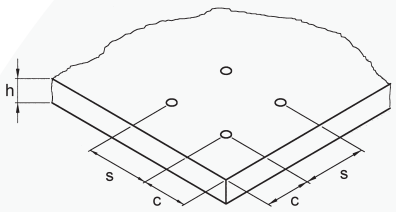
[1)] Not part of assessment, expansion clip steel, zinc plated.

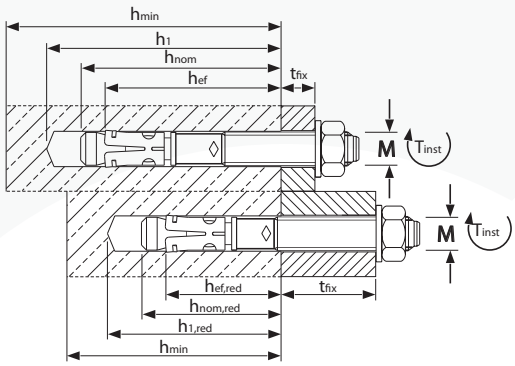
Recommended loads

Recommended loads for single anchor for a roughly design without influence of spacing and edge distance.
Total safety factor as per EAD 330232-00-0601. The partial safety factor γ_M of the ETA and a partial safety factor for actions of γ_f=1.4 is included.
If the conditions are not fulfilled the loads must be calculated acc. to EN 1992-4.
For further details observe ETA-19/0852.

Loads and performance data	Wedge Anchor BA			M6		M8		M10		M12		M16		M20	
Standard anchorage depth		h_{ef}	[mm]	40	-	44	-	48	-	65	-	82	-	100	-
Reduced anchorage depth		$h_{ef,red}$	[mm]	-	30[1)]	-	35[1)]	-	42	-	50	-	64	-	78
non-cracked concrete															
Mean ultimate loads, tension	C25/30	N_{um}	[kN]	12	9,6	18,7	12,3	23,6	19,2	34,5	26,1	51,4	43,6	70,0	53,6
Mean ultimate loads, shear	C25/30	V_{um}	[kN]	7,3	7,3	19,3	19,3	28,1	28,1	41,3	41,3	73,0	73,0	103,6	103,6
Recommended loads, tension	C20/25	$N_{rec,stat}$	[kN]	4,1	2,9	5,7	5,0	7,6	6,5	12,6	8,5	17,9	12,3	24,0	16,6
	C25/30	$N_{rec,stat}$	[kN]	4,1	3,1	6,3	5,5	8,4	7,2	13,8	9,3	19,6	13,5	26,3	18,1
	C30/37	$N_{rec,stat}$	[kN]	4,1	3,5	7,0	6,1	9,3	8,0	15,3	10,4	21,7	15,0	29,3	20,2
	C40/50	$N_{rec,stat}$	[kN]	4,1	4,0	7,3	7,0	10,7	9,2	16,7	12,0	25,3	17,4	34,0	23,4
	C50/60	$N_{rec,stat}$	[kN]	4,1	4,1	7,3	7,3	11,8	10,1	16,7	13,2	27,7	19,1	37,3	25,7
Recommended loads, shear	C20/25	$V_{rec,stat}$	[kN]	2,9	2,9	6,3	5,0	8,0	6,5	14,3	8,5	23,6	23,6	37,1	33,1
	> C25/30	$V_{rec,stat}$	[kN]	2,9	2,9	6,3	5,5	8,8	7,2	14,3	9,3	23,6	23,6	37,1	36,3
Recommended bending moments		$M_{rec,stat}$	[Nm]	5,1	5,1	13,1	13,1	25,7	25,7	44,6	44,6	99,9	99,9	195,0	195,0
Spacing and edge distance															
Effective anchorage depth		h_{ef}	[mm]	40	30[1)]	44	35[1)]	48	42	65	50	82	64	100	78
Characteristic spacing		$s_{cr,N}$	[mm]	120	90	132	105	144	126	195	150	246	192	300	234
Characteristic edge distance		$c_{cr,N}$	[mm]	60	45	66	52,5	72	63	97,5	75	123	96	150	117
Minimum spacing and edge distance															
Thickness of concrete slab		h_{min}	[mm]	100	80	100	80	100	100	130	100	170	130	200	160
Minimum spacing		s_{min}	[mm]	35	35	40	40	55	55	75	100	90	100	105	140
Minimum edge distance		c_{min}	[mm]	40	40	45	45	65	65	90	100	105	100	125	140
Installation parameters															
Drill hole diameter		d_o	[mm]	6	6	8	8	10	10	12	12	16	16	20	20
Diameter of clearance hole in fixture		d_f	[mm]	7	7	9	9	12	12	14	14	18	18	22	22
Depth of drill hole		h_1	[mm]	55	45	65	55	70	65	90	75	110	95	130	110
Installation torque		T_{inst}	[Nm]	8	8	15	15	30	30	50	50	100	100	200	200
Width across nut		SW	[mm]	10	10	13	13	17	17	19	19	24	24	30	30

[1)] Application limited to statically indeterminated systems.





4. BA - Stainless-steel A4

Installation and packaging data

	Standard anchorage depth				Reduced anchorage depth							
Description	max. Fix-ture thick-ness	Drill hole Ø x depth	Setting depth h_{nom}	Ancho-rage depth h_{ef}	max. Fixture thick-ness $t_{fix,red}$	Drill hole Ø x depth	Setting depth $h_{nom,red}$	Ancho-rage depth $h_{ef,red}$	An-chor-len-gth	Thread	pi-eces. per pkg.	weight per pkg.
[-]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[pcs]	[kg]
6-5/40 A4[1)]	-	-	-	-	5	6x35	27	18	40	M6x16	100	1,06
6-5/52 A4	-	-	-	-	5	6x45	39	30	52	M6x20	100	1,27
6-10-20/67 A4	10	6x55	49	40	20	6x45	39	30	67	M6x30	100	1,56
6-25-35/82 A4	25	6x55	49	40	35	6x45	39	30	82	M6x35	100	1,80
6-40-50/97 A4	40	6x55	49	40	50	6x45	39	30	97	M6x35	100	2,08
8-5/50 A4[1)]	-	-	-	-	5	8x45	35	24	50	M8x22	100	2,34
8-4/60 A4	-	-	-	-	4	8x55	47	35	60	M8x25	100	2,64
8-10-19/75 A4	10	8x65	56	44	19	8x55	47	35	75	M8x40	100	3,10
8-15-24/80 A4	15	8x65	56	44	24	8x55	47	35	80	M8x45	100	3,28
8-20-29/85 A4	20	8x65	56	44	29	8x55	47	35	85	M8x50	100	3,42
8-30-39/95 A4	30	8x65	56	44	39	8x55	47	35	95	M8x60	100	3,73
8-45-54/110 A4	45	8x65	56	44	54	8x55	47	35	110	M8x75	100	4,20
8-55-64/120 A4	55	8x65	56	44	64	8x55	47	35	120	M8x85	100	4,57
10-10/60 A4[1)]	-	-	-	-	10	10x50	40	25	60	M10x25	50	2,30
10-10-16/85 A4	10	10x70	62	48	16	10x65	56	42	85	M10x40	50	2,85
10-15-21/90 A4	15	10x70	62	48	21	10x65	56	42	90	M10x45	50	2,97
10-20-26/95 A4	20	10x70	62	48	26	10x65	56	42	95	M10x50	50	3,10
10-30-36/105 A4	30	10x70	62	48	36	10x65	56	42	105	M10x60	50	3,33
10-45-51/120 A4	45	10x70	62	48	51	10x65	56	42	120	M10x75	50	3,75
10-50-56/125 A4	50	10x70	62	48	56	10x65	56	42	125	M10x80	50	3,87
10-70-76/145 A4	70	10x70	62	48	76	10x65	56	42	145	M10x80	50	4,38
10-100-106/175 A4	100	10x70	62	48	106	10x65	56	42	175	M10x80	50	5,15
10-140-146/215 A4	140	10x70	62	48	146	10x65	56	42	215	M10x80	25	3,10
12-5/75 A4[1)]	-	-	-	-	5	12x65	55	38	75	M12x30	25	1,96
12-14/95 A4	-	-	-	-	14	12x75	66	50	95	M12x50	25	2,33
12-10-25/105 A4	10	12x90	81	65	25	12x75	66	50	105	M12x60	25	2,53
12-15-30/110 A4	15	12x90	81	65	30	12x75	66	50	110	M12x65	25	2,62
12-20-35/115 A4	20	12x90	81	65	35	12x75	66	50	115	M12x70	25	2,70
12-30-45/125 A4	30	12x90	81	65	45	12x75	66	50	125	M12x80	25	2,88
12-50-65/145 A4	50	12x90	81	65	65	12x75	66	50	145	M12x100	25	3,28
12-65-80/160 A4	65	12x90	81	65	80	12x75	66	50	160	M12x100	25	3,55
12-85-100/180 A4	85	12x90	81	65	100	12x75	66	50	180	M12x100	25	3,90
12-105-120/200 A4	105	12x90	81	65	120	12x75	66	50	200	M12x100	25	4,28
12-145-160/240 A4	145	12x90	81	65	160	12x75	66	50	240	M12x80	20	4,39
16-5/90 A4[1)]	-	-	-	-	5	16x75	65	47	90	M16x35	20	3,37
16-14/115 A4	-	-	-	-	14	16x95	83	64	115	M16x60	20	3,98
16-10-26/130 A4	10	16x110	99	80	26	16x95	83	64	130	M16x70	20	4,34
16-30-46/150 A4	30	16x110	99	80	46	16x95	83	64	150	M16x90	20	4,87
16-60-76/180 A4	60	16x110	99	80	76	16x95	83	64	180	M16x110	20	5,66
16-80-96/200 A4	80	16x110	99	80	96	16x95	83	64	200	M16x110	10	3,26

[1)] Not part of assessment.

	Standard anchorage depth				Reduced anchorage depth							
Description	max. Fix-ture thick-ness	Drill hole Ø x depth	Setting depth h_{nom}	Ancho-rage depth h_{ef}	max. Fixture thick-ness $t_{fix,red}$	Drill hole Ø x depth	Setting depth $h_{nom,red}$	Ancho-rage depth $h_{ef,red}$	An-chor-len-gth	Thread	pi-eces. per pkg.	weight per pkg.
[-]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[pcs]	[kg]
16-100-116/220 A4	100	16x110	99	80	116	16x95	83	64	220	M16x80	10	3,59
16-130-146/250 A4	130	16x110	99	80	146	16x95	83	64	250	M16x80	10	3,99
16-200-216/320 A4	200	16x110	99	80	216	16x95	83	64	320	M16x80	10	5,16
20-5-27/150 A4	5	20x130	121	100	27	20x110	99	78	150	M20x70	10	3,86
20-35-57/180 A4	35	20x130	121	100	57	20x110	99	78	180	M20x70	10	4,47
20-60-82/205 A4	60	20x130	121	100	82	20x110	99	78	205	M20x70	10	5,03
20-95-117/240 A4	95	20x130	121	100	117	20x110	99	78	240	M20x70	10	6,26

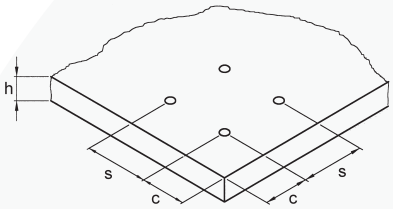
[1] Not part of assessment.

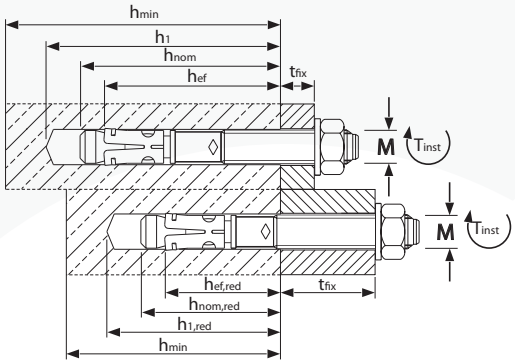
Recommended loads

Recommended loads for single anchor for a roughly design without influence of spacing and edge distance.
Total safety factor as per EAD 330232-00-0601. The partial safety factor γ_M of the ETA and a partial safety factor for actions of γ_f=1.4 is included.
If the conditions are not fulfilled the loads must be calculated acc. to EN 1992-4.
For further details observe ETA-19/0852.

Loads and performance data	Wedge Anchor BA A4 / HCR			M6		M8		M10		M12		M16		M20	
Standard anchorage depth		h_{ef}	[mm]	40	-	44	-	48	-	65	-	80	-	100	-
Reduced anchorage depth		$h_{ef,red}$	[mm]	-	30[1]	-	35[1]	-	42	-	50	-	64	-	78
		non-cracked concrete													
Mean ultimate loads, tension	C25/30	N_{um}	[kN]	11,0	10,2	19,6	12,4	23,1	17,5	36,4	22,6	53,5	39,7	73,0	53,1
Mean ultimate loads, shear	C25/30	V_{um}	[kN]	9,7	9,7	19,5	19,5	31,9	31,9	42,6	42,6	76,9	76,9	110,4	110,4
Recommended loads, tension	C20/25	$N_{rec,stat}$	[kN]	3,6	2,9	5,7	4,3	7,6	5,7	11,9	8,5	17,2	12,3	24,0	16,6
	C25/30	$N_{rec,stat}$	[kN]	3,9	3,1	6,3	4,7	8,3	6,3	13,0	9,3	18,8	13,5	26,3	18,1
	C30/37	$N_{rec,stat}$	[kN]	4,4	3,5	7,0	5,2	9,3	7,0	14,5	10,3	20,9	15,0	29,3	20,2
	C40/50	$N_{rec,stat}$	[kN]	4,8	4,0	8,1	6,1	10,8	8,1	16,8	12,0	24,3	17,4	34,0	23,4
	C50/60	$N_{rec,stat}$	[kN]	4,8	4,4	8,6	6,6	11,8	8,9	18,4	13,2	26,7	19,1	37,3	25,7
Recommended loads, shear	C20/25	$V_{rec,stat}$	[kN]	4,0	4,0	6,9	5,0	8,0	6,5	15,4	8,5	28,6	24,6	43,9	33,1
	> C25/30	$V_{rec,stat}$	[kN]	4,0	4,0	6,9	5,5	8,8	7,2	15,4	9,3	28,6	27,0	43,9	36,4
Recommended bending moments		$M_{rec,stat}$	[Nm]	5,7	5,7	13,7	13,7	28,0	28,0	48,6	48,6	113,7	113,7	231,6	231,6
Spacing and edge distance															
Effective anchorage depth		h_{ef}	[mm]	40	30[1]	44	35[1]	48	42	65	50	80	64	100	78
Characteristic spacing		$s_{cr,N}$	[mm]	120	90	132	105	144	126	195	150	240	192	300	234
Characteristic edge distance		$c_{cr,N}$	[mm]	60	45	66	52,5	72	63	97,5	75	120	96	150	117
Minimum spacing and edge distance															
Thickness of concrete slab		h_{min}	[mm]	100	80	100	80	100	100	130	100	170	130	200	160
Minimum spacing		s_{min}	[mm]	35	35	40	40	55	55	75	100	90	100	105	140
Minimum edge distance		c_{min}	[mm]	40	40	45	45	65	65	90	100	105	100	125	140
Installation parameters															
Drill hole diameter		d_o	[mm]	6	6	8	8	10	10	12	12	16	16	20	20
Diameter of clearance hole in fixture		d_f	[mm]	7	7	9	9	12	12	14	14	18	18	22	22
Depth of drill hole		h_1	[mm]	55	45	65	55	70	65	90	75	110	95	130	110
Installation torque		T_{inst}	[Nm]	6	6	15	15	25	25	50	50	100	100	160	160
Width across nut		SW	[mm]	10	10	13	13	17	17	19	19	24	24	30	30

[1] Application limited to statically indeterminated systems.





5. BA - Steel, Hot dipped galvanized

Installation and packaging data

	Standard anchorage depth				Reduced anchorage depth							
Description	max. Fixture thick-ness	Drill hole Ø x depth	Set-ting depth h_{nom}	Ancho-rage depth h_{ef}	max. Fixture thickness $t_{fix,red}$	Drill hole Ø x depth	Setting depth $h_{nom,red}$	Ancho-rage depth $h_{ef,red}$	An-chor-len-gth	Thread	pi-eces. per pkg.	weight per pkg.
[-]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[pcs]	[kg]
6-5/40 fvz[1)]	-	-	-	-	5	6x35	27	18	40	M6x16	100	1,06
6-10-20/67 fvz[1)]	10	6x55	49	40	20	6x45	39	30	67	M6x30	100	1,57
6-25-35/82 fvz[1)]	25	6x55	49	40	35	6x45	39	30	82	M6x35	100	1,90
6-40-50/97 fvz[1)]	40	6x55	49	40	50	6x45	39	30	97	M6x35	100	2,09
8-5/50 fvz[1)]	-	-	-	-	5	8x45	35	35	50	M8x22	100	2,36
8-4/60 fvz	-	-	-	-	4	8x55	47	35	60	M8x25	100	2,76
8-10-19/75 fvz	10	8x65	56	44	19	8x55	47	35	75	M8x40	100	3,17
8-15-24/80 fvz	15	8x65	56	44	24	8x55	47	35	80	M8x45	100	3,36
8-20-29/85 fvz	20	8x65	56	44	29	8x55	47	35	85	M8x50	100	3,50
8-30-39/95 fvz	30	8x65	56	44	39	8x55	47	35	95	M8x60	100	3,83
8-45-54/110 fvz	45	8x65	56	44	54	8x55	47	35	110	M8x75	100	4,29
8-55-64/120 fvz	55	8x65	56	44	64	8x55	47	35	120	M8x85	100	4,59
10-10/60 fvz[1)]	-	-	-	-	10	10x50	40	24	60	M10x25	50	2,32
10-10-16/85 fvz	10	10x70	62	48	16	10x65	56	42	85	M10x40	50	2,90
10-15-21/90 fvz	15	10x70	62	48	21	10x65	56	42	90	M10x45	50	3,01
10-20-26/95 fvz	20	10x70	62	48	26	10x65	56	42	95	M10x50	50	3,15
10-30-36/105 fvz	30	10x70	62	48	36	10x65	56	42	105	M10x60	50	3,35
10-45-51/120 fvz	45	10x70	62	48	51	10x65	56	42	120	M10x75	50	3,77
10-50-56/125 fvz	50	10x70	62	48	56	10x65	56	42	125	M10x80	50	3,93
10-70-76/145 fvz	70	10x70	62	48	76	10x65	56	42	145	M10x80	50	4,50
10-100-106/175 fvz	100	10x70	62	48	106	10x65	56	42	175	M10x80	50	4,93
10-140-146/215 fvz	140	10x70	62	48	146	10x65	56	42	215	M10x80	25	3,10
12-5/75 fvz[1)]	-	-	-	-	5	12x65	55	25	75	M12x30	25	1,99
12-13/95 fvz	-	-	-	-	13	12x75	67	50	95	M12x50	25	2,38
12-15-30/110 fvz	15	12x90	82	65	30	12x75	67	50	110	M12x65	25	2,66
12-20-35/115 fvz	20	12x90	82	65	35	12x75	67	50	115	M12x70	25	2,71
12-30-45/125 fvz	30	12x90	82	65	45	12x75	67	50	125	M12x80	25	2,92
12-50-65/145 fvz	50	12x90	82	65	65	12x75	67	50	145	M12x100	25	3,25
12-65-80/160 fvz	65	12x90	82	65	80	12x75	67	50	160	M12x100	25	3,54
12-85-100/180 fvz	85	12x90	82	65	100	12x75	67	50	180	M12x100	25	3,85
12-105-120/200 fvz	105	12x90	82	65	120	12x75	67	50	200	M12x100	25	4,28
16-13/115 fvz	-	-	-	-	13	16x95	84	38	115	M16x60	20	3,96
16-10-28/130 fvz	10	16x110	102	82	28	16x95	84	64	130	M16x70	20	4,41
16-30-48/150 fvz	30	16x110	102	82	48	16x95	84	64	150	M16x90	20	4,92
20-5-27/150 fvz	5	20x130	121	100	27	20x110	99	78	150	M20x70	10	3,84
20-35-57/180 fvz	35	20x130	121	100	57	20x110	99	78	180	M20x70	10	4,44
20-60-82/205 fvz	60	20x130	121	100	82	20x110	99	78	205	M20x70	10	5,00
20-95-117/240 fvz	95	20x130	121	100	117	20x110	99	78	240	M20x70	10	6,26

[1)] Not part of assessment

Recommended loads

Recommended loads for single anchor for a roughly design without influence of spacing and edge distance.
Total safety factor as per EAD 330232-00-0601. The partial safety factor γ_M of the ETA and a partial safety factor for actions of γ_f=1.4 is included.
If the conditions are not fulfilled the loads must be calculated acc. to EN 1992-4.
For further details observe ETA-19/0852.

Loads and performance data	Wedge Anchor BA fvz.			M6		M8		M10		M12		M16		M20	
Standard anchorage depth		h_{ef}	[mm]	40	-	44	-	48	-	65	-	82	-	100	-
Reduced anchorage depth		$h_{ef,red}$	[mm]	-	30[1)]	-	35[1)]	-	42	-	50	-	64	-	78
		non-cracked concrete													
Mean ultimate loads, tension	C25/30	N_{um}	[kN]	12	9,6	18,7	12,3	23,6	19,2	34,5	26,1	51,4	43,6	70,0	53,6
Mean ultimate loads, shear	C25/30	V_{um}	[kN]	7,3	7,3	19,3	19,3	28,1	28,1	41,3	41,3	73,0	73,0	103,6	103,6
Recommended loads, tension	C20/25	$N_{rec,stat}$	[kN]	4,1	2,9	5,7	5,0	7,6	6,5	12,6	8,5	17,9	12,3	24,0	16,6
	C25/30	$N_{rec,stat}$	[kN]	4,1	3,1	6,3	5,5	8,4	7,2	13,8	9,3	19,6	13,5	26,3	18,1
	C30/37	$N_{rec,stat}$	[kN]	4,1	3,5	7,0	6,1	9,3	8,0	15,3	10,4	21,7	15,0	29,3	20,2
	C40/50	$N_{rec,stat}$	[kN]	4,1	4,0	7,3	7,0	10,7	9,2	16,7	12,0	25,3	17,4	34,0	23,4
	C50/60	$N_{rec,stat}$	[kN]	4,1	4,1	7,3	7,3	11,8	10,1	16,7	13,2	27,7	19,1	37,3	25,7
Recommended loads, shear	C20/25	$V_{rec,stat}$	[kN]	2,9	2,9	6,3	5,0	8,0	6,5	14,3	8,5	23,6	23,6	37,1	33,1
	> C25/30	$V_{rec,stat}$	[kN]	2,9	2,9	6,3	5,5	8,8	7,2	14,3	9,3	23,6	23,6	37,1	36,3
Recommended bending moments		$M_{rec,stat}$	[Nm]	5,1	5,1	13,1	13,1	25,7	25,7	44,6	44,6	99,9	99,9	195,0	195,0
Spacing and edge distance															
Effective anchorage depth		h_{ef}	[mm]	40	30[1)]	44	35[1)]	48	42	65	50	82	64	100	78
Characteristic spacing		$s_{cr,N}$	[mm]	120	90	132	105	144	126	195	150	246	192	300	234
Characteristic edge distance		$c_{cr,N}$	[mm]	60	45	66	52,5	72	63	97,5	75	123	96	150	117
Minimum spacing and edge distance															
Thickness of concrete slab		h_{min}	[mm]	100	80	100	80	100	100	130	100	170	130	200	160
Minimum spacing		s_{min}	[mm]	35	35	40	40	55	55	75	100	90	100	105	140
Minimum edge distance		c_{min}	[mm]	40	40	45	45	65	65	90	100	105	100	125	140
Installation parameters															
Drill hole diameter		d_o	[mm]	6	6	8	8	10	10	12	12	16	16	20	20
Diameter of clearance hole in fixture		d_f	[mm]	7	7	9	9	12	12	14	14	18	18	22	22
Depth of drill hole		h_1	[mm]	55	45	65	55	70	65	90	75	110	95	130	110
Installation torque		T_{inst}	[Nm]	8	8	15	15	30	30	40	40	90	90	120	120
Width across nut		SW	[mm]	10	10	13	13	17	17	19	19	24	24	30	30

[1)] Application limited to statically indeterminated systems.