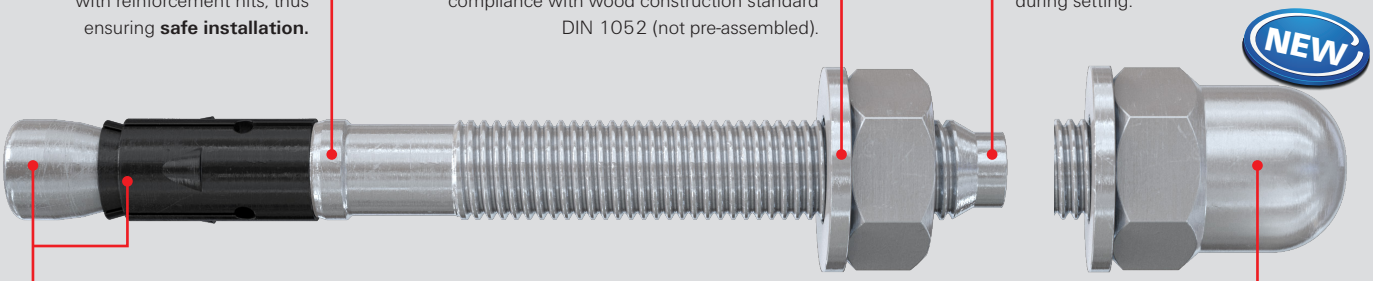
fischer
Bolt anchor FAZ II

NEW

The power anchor for highest demands

fischer
innovative solutions

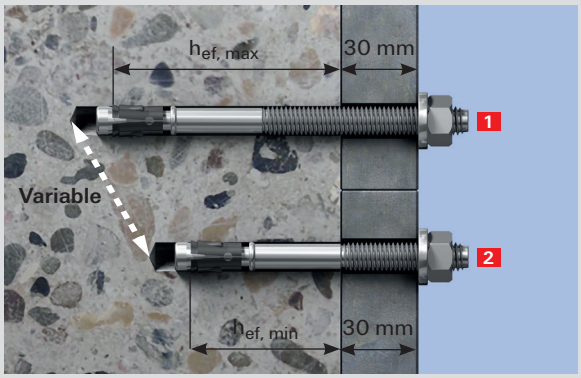
Bolt anchor FAZ II
For highest demands
Powerful and flexible



NEW

Variable embedment depths

Enables most accurate adaption on the loads (M 8 - M 16).



1 Maximum load with maximum embedment depth FAZ II 10 A4
60 mm embedment depth = maximum permissible tension load of **6.2 kN** and shear load of **15.1 kN.**

Permissible loads may be calculated for embedment depth between 40 mm and 60 mm.

2 Fast installation thanks to minimum embedment depth FAZ II 10 A4
40mm embedment depth = permissible tension load of **4.3 kN** and shear load of **11.3 kN**.

Powerful and flexible

- The FAZ II is suitable for pre-positioned and push-through installation and is also ideal for stand-off installation.
- Experts report for use in concrete C12/15 and C80/95.
- The assessment document covers the use of hollow drills and diamond drills.

NEW

Your advantages at a glance

- With the new ETA assessment for Option 1 the tension loads are increased up to 10% and the shear loads up to 17%. So fewer and smaller anchors are required.
- The minimum embedment depth (see example) makes considerably shorter drill hole depths possible, thus provides a noticeably faster installation and less rebar hits.
- The new cup nut, not only gives the option for a better and refined optical design but also, ensures an accident free installation.
- FAZ II 6: First bolt anchor with drill-hole diameter 6 mm and ETA Option 1 worldwide, for safe and approved anchorage.

Approvals

ETA-05/0069 ETAG 001 Option 1 for cracked concrete seismic performance category C1, C2

ICC ES ESR-2948 — See ICC-ES Evaluation Report at www.ic-es.org — Inspection agency: IEA (AA-707)

Fire resistance classification R 120 — Anchor types see test report

M8 - M20

FM APPROVED from M10

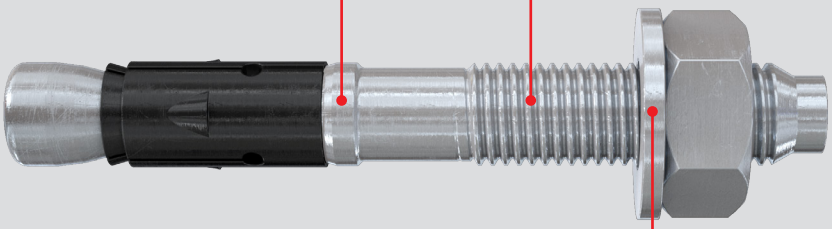
1200 °C — ZTV — anchor types see test report (only FAZ II C)

SEISMIC

Bolt anchor FAZ II K
For highest demands
Short and practical

The 12 sizes of FAZ II K in zinc-plated or stainless steel versions can **be used up to a fixture thickness of 20 mm.**

The shorter bolt with minimum embedment depth is the **economic choice** for numerous applications such as the fixing of cable trays and substructures for façades.



With a choice of **normal washer or large washer GS.**

Short and practical

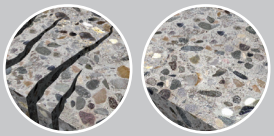
- The FAZ II K is suitable for pre-positioned and push-through installation.
- The small drill hole depth of the K-version speeds up installation even further and reduces the number of reinforcement hits.

Your advantages at a glance

- The properties of the FAZ II K considerably minimise the drilling effort and the hammer blows required to drive in the bolt anchor, saving energy and installation time.
- The tried-and-trusted expansion clip ensures a high load-bearing capacity even with minimum embedment depth. This guarantees an unbeatable price-performance ratio.

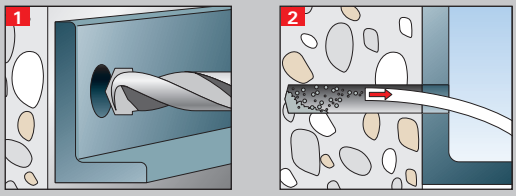
Approvals

Recommendation



- Suitable for the following building materials:
  - Cracked concrete
  - Uncracked concrete

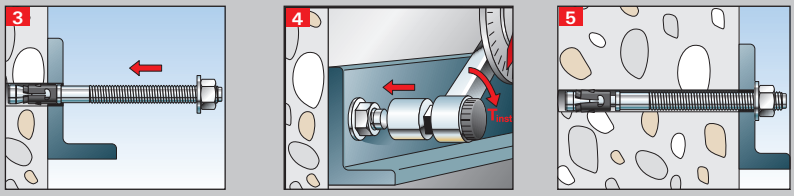
Drill-hole preparation



1 Create drill hole

2 Clean drill hole

Push through installation with hexagon nut

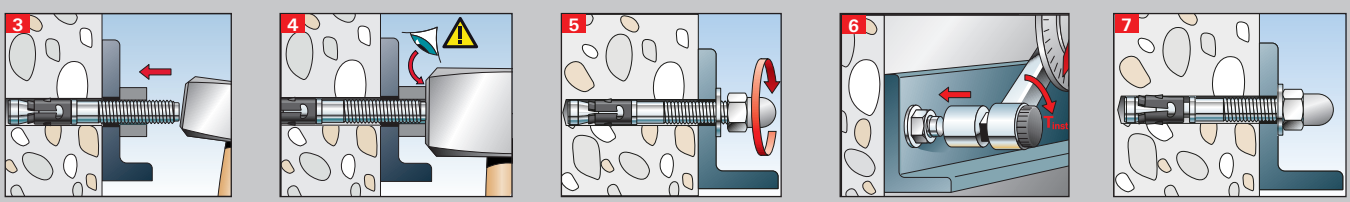


3 Drive in anchor

4 Apply installation torque

5 Finished!

Push trough installation of the cup nut version with setting gauge



3 Set the fastener

4 Check offset

5 Turn on cup nut

6 Apply installation torque

7 Finished!

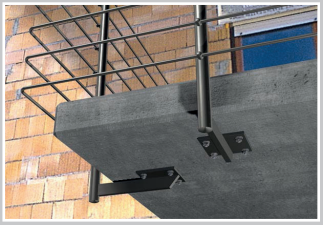
Applications
Typical anchorage solutions for different building segments

Metal construction

Railings

- With maximum embedment depth for maximum loads and minimum edge distance and axial spacing in cracked concrete
- For applications with sophisticated design, visually appealling

e. g. FAZ II 10/10 H A4



- With minimum embedment depth for use in thin concrete members from 80 mm thickness

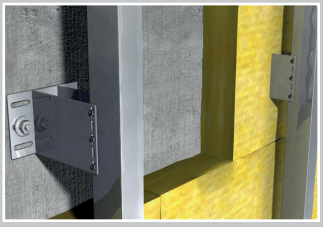
e. g. FAZ II 10/10 K A4

Façade construction

Façade substructure

- With maximum embedment depth for heavy-duty façade substructures
- In stainless steel
- Version FAZ II GS for the even better alignment of brackets with long holes

e. g. FAZ II 12/10 GS A4

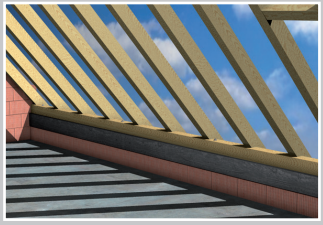


- With minimum embedment depth for minimum loads or shallow component thicknesses
- 27% less drilling effort compared with the maximum version and significantly fewer reinforcement hits

e. g. FAZ II 10/10 K A4

Timber construction

Railings



- With maximum embedment depth, ideal for anchoring sleepers/beams
- Also ideal for extreme usable lenghts
- With extra-large washer version HBS in accordance with wood construction standard DIN 1052

e. g. FAZ II 12/100 HBS

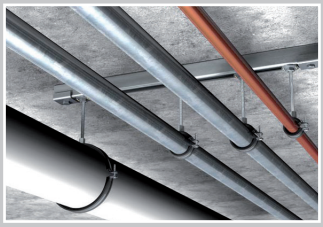
Tension anchor

- With minimum embedment depth but without load reduction
- 27% less drilling effort (in comparison to maximum version)

e. g. FAZ II 10/10 K GS

Sanitary / Heating / Electric

Pipe routes



- Suitable for fixing of pipe hangers, metal profiles or mounting rails
- Approved for single point anchorings

e. g. FAZ II 6/10

Cable trays

- With minimum embedment depth but without load reduction
- 27% less drilling effort towards the maximum version and far fewer reinforcement hits

e. g. FAZ II 10/10 K

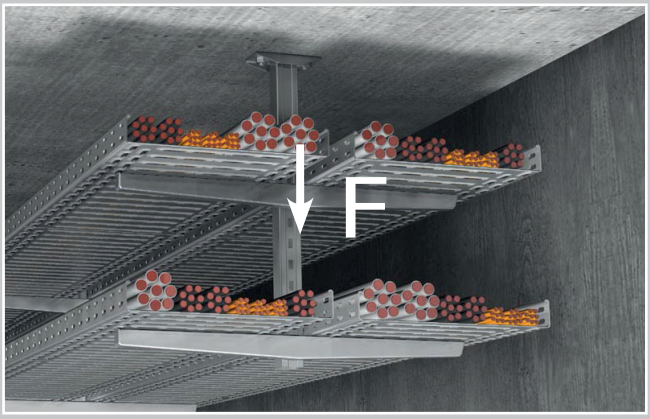
Applications
Design examples

Processing of thin or slim components, balcony railings under thin concrete plate

Basic conditions

- Fixing to the underside of the balcony
- Rail load 0.5 kN/m
- Length of balcony 2500 mm
- Rail height 1000 mm

Installation of cable trays with suspended supports



Basic conditions

- Cable trays
- 2 anchors per anchor plate
- Distance between anchors 140 mm
- Distance between the suspended supports 2500 mm
- Anchor plate 100 x 200 mm
- Thickness of concrete ceiling 200 mm

fischer

FAZ II 10/10 K
8.6 kN per anchor plate
with **40 mm** embedment depth
and **55 mm** drill hole depth

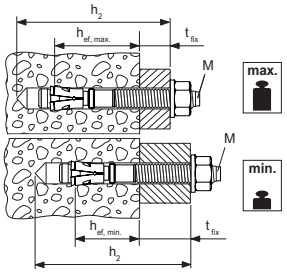
Competitor

Competitive product M 10/10
8.6 kN per anchor plate
with **60 mm** embedment depth
and **75 mm** drill hole depth

Advantages of the short version of the fischer bolt anchor FAZ II 10/10 K

- 27% less drilling effort
- Fewer reinforcement hits
- Significantly faster installation

Range



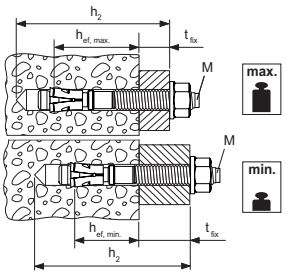
Bolt anchor FAZ II (maximum version)

Item	Art.-No. Steel, zinc-plated gvz	Art.-No. stainless steel A4	Art.-No. highly corrosi-onresistant steel C	Approval ETA	Approval ICC	Approval Seismic C1/C2[1]	Drill diameter d_0 [mm]	Min. drill hole depth for push-through installation h_2 [mm]	Anchor length l [mm]	Maximum embedment depth with respective usable length $h_{ef,max}$ [mm]	Maximum embedment depth with respective usable length t_{fix} [mm]	Minimum embedment depth with respective usable length $h_{ef,min}$ [mm]	Minimum embedment depth with respective usable length t_{fix} [mm]	Thread ⌀ x length [mm]	Sales unit [pcs]
FAZ II 6/10	**542621**	**542623**	–	■	–	–	6	60	65	40	10	–	–	M 6 x 25	50
FAZ II 6/20	**542622**	**542624**	–	■	–	–	6	70	75	40	20	–	–	M 6 x 35	50
FAZ II 8/10	**94871**	**501396**	–	■	▲	C1	8	65	75	45	10	35[2]	20	M 8 x 38	50
FAZ II 8/10	–	–	**501428**	■	▲	C1	8	65	75	45	10	35[2]	20	M 8 x 38	10
FAZ II 8/30	**94877**	**501399**	–	■	▲	C1	8	85	95	45	30	35[2]	40	M 8 x 58	50
FAZ II 8/30	–	–	**501429**	■	▲	C1	8	85	95	45	30	35[2]	40	M 8 x 58	10
FAZ II 8/50	**94878**	**501401**	–	■	▲	C1	8	105	115	45	50	35[2]	60	M 8 x 78	50
FAZ II 8/100	**94879**	–	–	■	▲	C1	8	155	165	45	100	35[2]	110	M 8 x 128	25
FAZ II 8/160	**503251**	–	–	■	▲	C1	8	215	225	45	160	35[2]	170	M 8 x 100	20
FAZ II 10/10	**94981**	**501403**	–	■	▲	C1/C2	10	85	95	60	10	40	30	M 10 x 53	50
FAZ II 10/10	–	–	**501430**	■	▲	C1	10	85	95	60	10	40	30	M 10 x 53	10
FAZ II 10/20	**94982**	–	–	■	▲	C1/C2	10	95	105	60	20	40	40	M 10 x 63	25
FAZ II 10/20	–	**501406**	–	■	▲	C1/C2	10	95	105	60	20	40	40	M 10 x 63	50
FAZ II 10/30	**94983**	–	–	■	▲	C1/C2	10	105	115	60	30	40	50	M 10 x 73	25
FAZ II 10/30	–	**501407**	–	■	▲	C1/C2	10	105	115	60	30	40	50	M 10 x 73	50
FAZ II 10/30	–	–	**503185**	■	▲	C1	10	105	115	60	30	40	50	M 10 x 73	10
FAZ II 10/50	**94984**	**501409**	–	■	▲	C1/C2	10	125	135	60	50	40	70	M 10 x 93	20
FAZ II 10/70	–	**501410**	–	■	▲	C1/C2	10	145	155	60	70	40	90	M 10 x 113	20
FAZ II 10/80	**94985**	–	–	■	▲	C1/C2	10	155	165	60	80	40	100	M 10 x 123	20
FAZ II 10/100	**94986**	**501411**	–	■	▲	C1/C2	10	175	185	60	100	40	120	M 10 x 143	20
FAZ II 10/160	**503252**	**501412**	–	■	▲		10	235	245	60	160	40	180	M 10 x 193	20
FAZ II 12/10	**95419**	**501413**	–	■	▲	C1/C2	12	100	110	70	10	50	30	M 12 x 61	20
FAZ II 12/10	–	–	**503186**	■	▲	C1	12	100	110	70	10	50	30	M 12 x 61	10
FAZ II 12/20	**95420**	**501415**	–	■	▲	C1/C2	12	110	120	70	20	50	40	M 12 x 71	20
FAZ II 12/30	**95421**	**501416**	–	■	▲	C1/C2	12	120	130	70	30	50	50	M 12 x 81	20
FAZ II 12/30	–	–	**501431**	■	▲	C1	12	120	130	70	30	50	50	M 12 x 81	10
FAZ II 12/50	**95446**	**501419**	–	■	▲	C1/C2	12	140	150	70	50	50	70	M 12 x 101	20
FAZ II 12/60	–	**501420**	–	■	▲	C1/C2	12	150	160	70	60	50	80	M 12 x 111	20
FAZ II 12/80	**95454**	–	–	■	▲	C1/C2	12	170	180	70	80	50	100	M 12 x 131	20
FAZ II 12/100	**95470**	**501421**	–	■	▲	C1/C2	12	190	200	70	100	50	120	M 12 x 151	20
FAZ II 12/160	**503253**	–	–	■	▲	-	12	250	260	70	160	50	180	M 12 x 186	10

1) Only with maximum embedment depth

2) With minimum embedment depth only for statically interdeterminate systems

Range

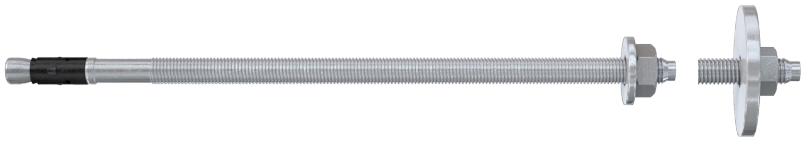


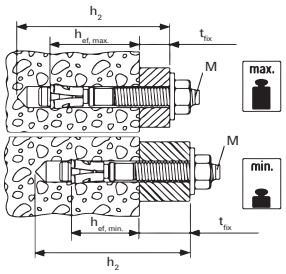
Bolt anchor FAZ II (maximum version) / bolt anchor FAZ II H (cap nut version)

Item	Art.-No. Steel, zinc-plated gvz	Art.-No. stainless steel A4	Art.-No. highly corrosi-onresistant steel C	Approval ETA	Approval ICC	Seismic C1/C2[1]	Drill diameter d_0 [mm]	Min. drill hole depth for push-through installation h_2 [mm]	Anchor length l [mm]	Maximum embedment depth with respective usable length $h_{ef,max.}$ [mm]	Maximum embedment depth with respective usable length t_{fix} [mm]	Minimum embedment depth with respective usable length $h_{ef,min.}$ [mm]	Minimum embedment depth with respective usable length t_{fix} [mm]	Thread ⌀ x length [mm]	Sales unit [pcs]
FAZ II 12/160	–	**503180**	–	■	▲	–	12	250	260	70	160	50	180	M 12 x 186	20
FAZ II 12/200	**95605**	–	–	■	▲	–	12	290	300	70	200	50	220	M 12 x 186	10
FAZ II 16/5	**522124**	–	–	■	▲	C1/C2	16	115	128	85	5	65	25	M 16 x 64	10
FAZ II 16/5	–	**522125**	–	■	▲	C1/C2	16	115	128	85	5	65	25	M 16 x 64	20
FAZ II 16/25	–	**501423**	–	■	▲	C1/C2	16	135	148	85	25	65	45	M 16 x 84	10
FAZ II 16/25	**95836**	–	**501432**	■	▲	C1	16	135	148	85	25	65	45	M 16 x 84	10
FAZ II 16/50	**95864**	–	**503187**	■	▲	C1	16	160	173	85	50	65	70	M 16 x 109	10
FAZ II 16/50	–	**501424**	–	■	▲	C1/C2	16	160	173	85	50	65	70	M 16 x 109	20
FAZ II 16/60	–	**532570**	–	■	▲	C1/C2	16	170	183	85	60	65	80	M 16 x 119	20
FAZ II 16/100	**95865**	**501425**	–	■	▲	C1/C2	16	210	223	85	100	65	120	M 16 x 159	10
FAZ II 16/160	**503254**	–	–	■	▲	C1/C2	16	270	283	85	160	65	180	M 16 x 189	10
FAZ II 16/200	**95967**	–	–	■	▲	–	16	310	323	85	200	65	220	M 16 x 189	10
FAZ II 16/250	**95968**	–	–	■	▲	–	16	360	373	85	250	65	270	M 16 x 100	10
FAZ II 16/300	**96188**	–	–	■	▲	–	16	410	423	85	300	65	320	M 16 x 100	10
FAZ II 20/30	**46632**	–	–	■	▲	C1/C2	20	155	172	100	30	–	–	M 20 x 54	5
FAZ II 20/30	–	**501426**	–	■	▲	C1/C2	20	155	172	100	30	–	–	M 20 x 54	4
FAZ II 20/60	**46633**	–	–	■	▲	C1/C2	20	185	202	100	60	–	–	M 20 x 84	5
FAZ II 20/60	–	**503183**	–	■	▲	C1/C2	20	185	202	100	60	–	–	M 20 x 84	4
FAZ II 20/160	**503255**	–	–	■	▲	C1/C2	20	285	302	100	160	–	–	M 20 x 100	5
FAZ II 24/30	**46635**	–	–	■	▲	C1	24	185	205	125	30	–	–	M 24 x 58	5
FAZ II 24/30	–	**501427**	–	■	▲	C1	24	185	205	125	30	–	–	M 24 x 58	4
FAZ II 24/60	**46636**	–	–	■	▲	C1	24	215	235	125	60	–	–	M 24 x 88	5
FAZ II 24/60	–	**503184**	–	■	▲	C1/C2	24	215	235	125	60	–	–	M 24 x 88	4
FAZ II 10/10 H [2]	**543392**	**543396**	–	■	–	C1/C2	10	87	95	60	10	40	30	M 10 x 53	20
FAZ II 10/20 H [2]	**543393**	**543397**	–	■	–	C1/C2	10	97	105	60	20	40	40	M 10 x 63	20
FAZ II 12/10 H [2]	**543394**	**543398**	–	■	–	C1/C2	12	98.5	109	70	10	50	30	M 12 x 61	20
FAZ II 12/20 H [2]	**543395**	**543399**	–	■	–	C1/C2	12	108.5	119	70	20	50	40	M 12 x 71	20

1) Only with maximum embedment depth
2) Available from spring 2018

Range





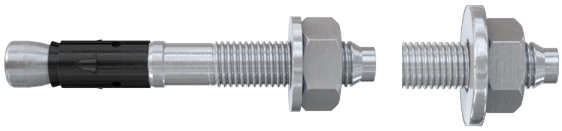
Bolt anchor FAZ II GS (with large washer) / FAZ II HBS (washer compliant to timber construction standard DIN 1052)

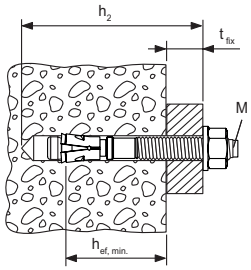
Item	Art.-No. Steel, zinc-plated gvz	Art.-No. stainless steel A4	Approval ETA	Approval Seismic C1/C2 1)	Drill diameter d_0 [mm]	Min. drill hole depth for push-through installation h_2 [mm]	Anchor length l [mm]	Maximum embedment depth with respective usable length $h_{ef,max.}$ [mm]	Maximum embedment depth with respective usable length t_{fix} [mm]	Minimum embedment depth with respective usable length $h_{ef,min.}$ [mm]	Minimum embedment depth with respective usable length t_{fix} [mm]	Thread ⌀ x length [mm]	Washer (outer diameter x thickness) [mm]	Sales unit [pcs]
FAZ II 8/10 GS	**94872**	**501398**	■	C1	8	65	75	45	10	35 2)	20	M 8 x 38	22 x 2.5	50
FAZ II 8/30 GS	**96189**	**501400**	■	C1	8	85	95	45	30	35 2)	40	M 8 x 58	22 x 2.5	50
FAZ II 10/10 GS	**96291**	**501405**	■	C1/C2	10	85	95	60	10	40	30	M 10 x 53	25 x 3	50
FAZ II 10/30 GS	**96297**	–	■	C1/C2	10	105	115	60	30	40	50	M 10 x 73	25 x 3	25
FAZ II 10/30 GS	–	**501408**	■	C1/C2	10	105	115	60	30	40	50	M 10 x 73	25 x 3	50
FAZ II 12/10 GS	**96303**	**501414**	■	C1/C2	12	100	110	70	10	50	30	M 12 x 61	30 x 3	20
FAZ II 12/20 GS	**502530**	–	■	C1/C2	12	110	120	70	20	50	40	M 12 x 71	30 x 3	20
FAZ II 12/30 GS	**96340**	**501418**	■	C1/C2	12	120	130	70	30	50	50	M 12 x 81	30 x 3	20
FAZ II 12/50 GS	**502531**	–	■	C1/C2	12	140	150	70	50	50	70	M 12 x 101	30 x 3	20
FAZ II 12/80 GS	**538430**	–	■	C1/C2	12	170	180	70	80	50	100	M 12 x 131	44 x 4	20
FAZ II 12/100 GS	**502532**	–	■	C1/C2	12	190	200	70	100	50	120	M 12 x 151	30 x 3	20
FAZ II 12/100 GS	**538702**	–	■	C1/C2	12	190	200	70	100	50	120	M 12 x 151	44 x 4	20
FAZ II 12/120 GS	**96367**	–	■	C1/C2	12	210	220	70	120	50	140	M 12 x 171	30 x 3	20
FAZ II 12/120 GS	**538703**	–	■	C1/C2	12	210	220	70	120	50	140	M 12 x 171	44 x 4	20
FAZ II 12/140 GS	**538433**	–	■	C1/C2	12	230	240	70	140	50	160	M 12 x 186	44 x 4	20
FAZ II 12/160 GS	**538431**	–	■	C1/C2	12	250	260	70	160	50	180	M 12 x 186	44 x 4	20
FAZ II 12/160 GS	–	**503181**	■	–	12	250	260	70	160	50	180	M 12 x 186	44 x 4	20
FAZ II 12/180 GS	**538434**	–	■	C1/C2	12	270	280	70	180	50	200	M 12 x 186	44 x 4	20
FAZ II 12/200 GS	**538432**	–	■	C1/C2	12	290	300	70	200	50	220	M 12 x 186	44 x 4	20
FAZ II 16/160 GS	**503261**	–	■	C1/C2	16	270	283	85	160	65	180	M 16 x 189	56 x 5	10
FAZ II 16/160 GS	–	**503182**	■	C1/C2	16	270	283	85	160	65	180	M 16 x 100	56 x 5	4
FAZ II 16/200 GS	**96370**	–	■	–	16	310	323	85	200	65	220	M 16 x 189	56 x 5	10
FAZ II 12/100 HBS	**522951**	–	■	C1/C2	12	190	205	70	100	50	120	M 12 x 151	58 x 6	20
FAZ II 12/120 HBS	**522952**	–	■	C1/C2	12	210	225	70	120	50	140	M 12 x 171	58 x 6	20
FAZ II 16/160 HBS	**522953**	–	■	C1/C2	16	270	278	85	160	65	180	M 16 x 189	68 x 6	10
FAZ II 16/200 HBS	**522954**	–	■	–	16	310	328	85	200	65	220	M 16 x 189	68 x 6	10

1) Only with maximum embedment depth

2) With minimum embedment depth only for statically interdeterminate systems

Range





Bolt anchor FAZ II K / FAZ II K GS (short version)

Item	Art.-No. Steel, zinc-plated gvz	Art.-No. stainless steel A4	Approval ETA	Approval Seismic C1/C2	Nominal drill diameter d_0 [mm]	Min. drill hole depth for push-through installation h_2 [mm]	Anchor length l [mm]	Minimum embedment depth with respective usable length $h_{ef,min}$ [mm]	Minimum embedment depth with respective usable length t_{fix} [mm]	Thread dia. x length [mm]	Washer (outer diameter x thickness) [mm]	Sales unit [pcs]
FAZ II 8/5 K	**538989**	**538990**	■	–	8	45	60	35 [1]	5	M 8 x 23	16 x 1.6	50
FAZ II 10/10 K	**522108**	**522116**	■	C1/C2	10	65	75	40	10	M 10 x 33	20 x 2.0	50
FAZ II 10/20 K	**522110**	–	■	C1/C2	10	75	85	40	20	M 10 x 43	20 x 2.0	25
FAZ II 10/20 K	–	**522117**	■	C1/C2	10	75	85	40	20	M 10 x 43	20 x 2.0	50
FAZ II 12/10 K	**522118**	**522122**	■	C1/C2	12	80	90	50	10	M 12 x 41	24 x 2.5	20
FAZ II 12/20 K	**522119**	**522123**	■	C1/C2	12	90	100	50	20	M 12 x 51	24 x 2.5	20
FAZ II 10/10 K GS	**522115**	–	■	C1/C2	10	65	75	40	10	M 10 x 33	25 x 3.0	50
FAZ II 12/10 K GS	**522121**	–	■	C1/C2	12	80	90	50	10	M 12 x 41	30 x 3.0	20

1) With minimum embedment depth only for statically interdeterminate systems

Loads
Non-cracked concrete

Bolt anchor FAZ II, FAZ II K and FAZ II GS (HBS)
zinc plated steel / stainless steel / high corrosion resistant steel

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	**Material fixing element**	**Min. member thickness** h_{min} **[mm]**	**Effective anchorage depth** h_{ef} [4)] **[mm]**	**Installation torque** T_{inst} **[Nm]**	**Permissible tension load** N_{perm} [6)] **[kN]**	**Permissible shear load** V_{perm} [6)] **[kN]**	**Required edge distance (with one edge) for** Max. tension load c **[mm]**	Max. shear load c **[mm]**	**Required spacing for** Max. load s_{cr} **[mm]**	**Min. spacing** s_{min} [7)] **[mm]**	**Min. edge distance** c_{min} [7)] **[mm]**
FAZ II 6	**gvz**	80	40	8	3,6	3,4	45	55	120	35	45
	A4				5,0	5,0	50	85			
	C										
FAZ II 8	**gvz**	80	35 [5)]	20	5,0	7,8	85	140	105	40	40
		90	45		6,7		80	125	135		
	A4	80	35 [5)]		5,0	9,6	85	175	105		
		90	45		6,7		80	160	135		
	C	80	35 [5)]		5,0		85	175	105		
		90	45		6,7		80	160	135		
FAZ II 10	**gvz**	90	40	45	6,1	12,2	80	205	120	40	45
		110	60		9,5		75	175	180		
	A4	90	40		6,1	15,1	80	260	120		
		110	60		9,5		75	220	180		
	C	90	40		6,1		80	260	120		
		110	60		9,5		75	220	180		
FAZ II 12	**gvz**	100	50	60	8,5	17,5	100	275	150	50	55
		120	70		10,5		80	240	210		
	A4	100	50		8,5	21,9	100	350	150		
		120	70		10,5		80	305	210		
	C	100	50		8,5		100	350	150		
		120	70		10,5		80	305	210		
FAZ II 16	**gvz**	140	65	110	12,6	31,4	130	410	195	65	65
			85		18,8		170	400	255		
	A4		65		12,6	39,9	130	535	195		
			85		18,8		170	520	255		
	C		65		12,6		130	535	195		
			85		18,8		170	520	255		
FAZ II 20	**gvz**	170	100	200	24,0	46,5	230	530	300	95	95
	A4					60,7		515			
	C										
FAZ II 24	**gvz**	210	125	270	33,6	62,9	265	630	375	100	135
	A4					80,7		835			
	C										

For the design the complete assessment ETA-05/0069, issue date 03.07.2017 has to be considered. [8)]

1) The partial safety factors for material resistance as regulated in the ETA 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 $s \geq 3 \times h_{ef}$ and an edge distance $c \geq 1.5 \times h_{ef}$. Accurate data see ETA.
2) For higher concrete strength classes up to C50/60 higher permissible loads may be possible.
3) Drill method hammer drilling resp. hollow drilling. For further allowable drill methods see ETA.
4) Eff. anchorage depth: min. anchorage depth, max. anchorage depth
5) The anchorage depths smaller than 40 mm are only allowed for single anchors as part of a multiple fixing of non-structural systems.
6) For combinations of tensile loads, shear loads, bending moments as well as reduced edge distances or spacings (anchor groups) see ETA.
7) Minimum possible axial spacings resp. edge distance while reducing the permissible load.
8) The given loads refer to the European Technical Assessment ETA-05/0069, issue date 03.07.2017. Design of the loads according TR055/ETAG 001, Annex C, Method A (for static resp. quasi-static loads).

Loads
Cracked concrete

Bolt anchor FAZ II, FAZ II K and FAZ II GS (HBS)
zinc plated steel / stainless steel / high corrosion resistant steel

Permissible loads of a single anchor in cracked normal concrete (concrete tension zone) of strength class C20/25 (~ B25) [1) 2) 3) 9)]										Minimum spacings while reducing the load	
Type	**Material fixing element**	**Min. member thickness** h_{min} **[mm]**	**Effective anchorage depth** h_{ef} [4)] **[mm]**	**Installation torque** T_{inst} **[Nm]**	**Permissible tension load** N_{perm} [6)] **[kN]**	**Permissible shear load** V_{perm} [6)] **[kN]**	**Required edge distance (with one edge) for** Max. tension load c **[mm]**	Max. shear load c **[mm]**	**Required spacing for** Max. load s_{cr} **[mm]**	**Min. spacing** s_{min} [7)] **[mm]**	**Min. edge distance** c_{min} [7)] **[mm]**
FAZ II 6	**gvz**	80	40	8	0,7	3,4	45	80	120	35	45
	A4					5,0		125			
	C										
FAZ II 8	**gvz**	80	35 [5)]	20	2,6	7,8	40	200	105	35	40
		90	45		3,8		45	185	135		
	A4	80	35 [5)]		2,6	8,9	40	235	105		
		90	45		3,8	9,6	45		135		
	C	80	35 [5)]		2,6	8,9	40		105		
		90	45		3,8	9,6	45		135		
FAZ II 10	**gvz**	90	40	45	4,3	11,3	60	275	120	40	45
		110	60		6,2	12,2	65	255	180		
	A4	90	40		4,3	11,3	60	275	120		
		110	60		6,2	15,1	65	325	180		
	C	90	40		4,3	11,3	60	275	120		
		110	60		6,2	15,1	65	325	180		
FAZ II 12	**gvz**	100	50	60	6,1	17,5	75	400	150	50	55
		120	70		9,5		100	350	210		
	A4	100	50		6,1	18,8	75	435	150		
		120	70		9,5	21,9	100	450	210		
	C	100	50		6,1	18,8	75	435	150		
		120	70		9,5	21,9	100	450	210		
FAZ II 16	**gvz**	140	65	110	9,0	28,7	100	545	195	65	65
			85		13,4	31,4	130	585	255		
	A4		65		9,0	28,7	100	545	195		
			85		13,4	39,9	130	760	255		
	C		65		9,0	28,7	100	545	195		
			85		13,4	39,9	130	760	255		
FAZ II 20	**gvz**	170	100	200	17,1	44,6	150	745	300	95	85
	A4										
	C										
FAZ II 24	**gvz**	210	125	270	24,0	57,5	170	840	375	100	100
	A4										
	C										

For the design the complete assessment ETA-05/0069, issue date 03.07.2017 has to be considered.[8)]

1) The partial safety factors for material resistance as regulated in the ETA 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 $s \geq 3 \times h_{ef}$ and an edge distance $c \geq 1.5 \times h_{ef}$. Accurate data see ETA.
2) For higher concrete strength classes up to C50/60 higher permissible loads may be possible.
3) Drill method hammer drilling resp. hollow drilling. For further allowable drill methods see ETA.
4) Eff. anchorage depth: min. anchorage depth, standard anchorage depth, max. anchorage depth
5) The anchorage depths smaller than 40 mm are only allowed for single anchors as part of a multiple fixing of non-structural systems.
6) For combinations of tensile loads, shear loads, bending moments as well as reduced edge distances or spacings (anchor groups) see ETA.
7) Minimum possible axial spacings resp. edge distance while reducing the permissible load.
8) The given loads refer to the European Technical Assessment ETA-05/0069, issue date 03.07.2017. Design of the loads according TR055/ETAG 001, Annex C, Method A (for static resp. quasi-static loads).
9) 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 wk ~ 0.3mm.

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