For highest demands. Powerful and flexible.

VERSIONS

- zinc-plated steel
- stainless steel
- highly corrosion-resistant steel

BUILDING MATERIALS

Approved for:

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

Also suitable for:

- Concrete C12/15
- Natural stone with dense structure

APPROVALS

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

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

Fire resistance classification R 120
Anchor types see test report

Rostfrei
INOX STAINLESS STEEL

M8 - M20

FM APPROVED from M10

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

SEISMIC

ADVANTAGES

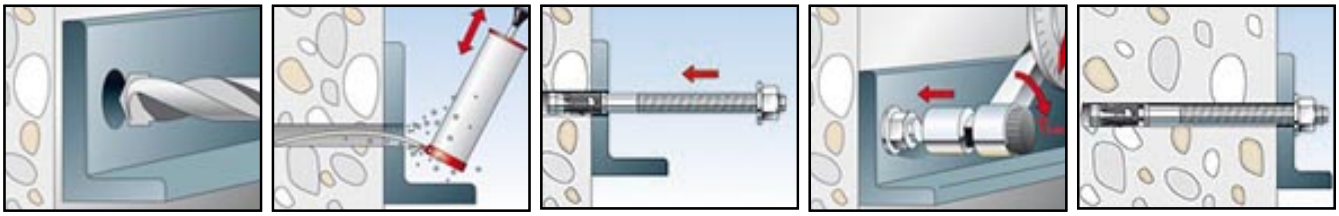
- The FAZ II tried and tested expansion clip enables the highest load bearing capacity. Thus fewer fixing points and smaller anchor plates are required.
- The reduced anchorage depth allows for significantly reduced drill hole depths and reduces the number of reinforcement hits. This allows for a noticeably quicker installation.
- Fewer hammer blows when hammering in the anchor, together with the low torque slippage, ensure a noticeably simple and comfortable setting process.
- The international approvals guarantee maximum safety and the best performance. These approvals even cover use in earthquake zones (seismic).

APPLICATIONS

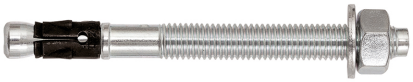
- Steel constructions
- Guard rails
- Consoles
- Ladders
- Cable conduits
- Machines
- Staircases
- Gates
- Façades
- Wood constructions

FUNCTIONING

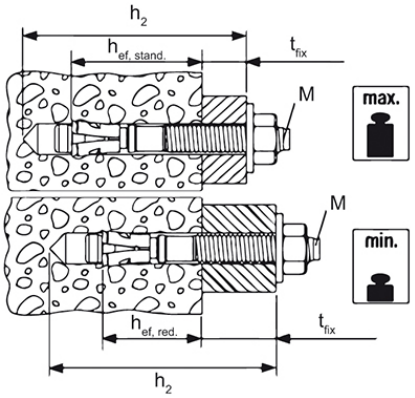
- The FAZ II is suitable for pre-positioned and push-through installation and is also ideal for stand-off installation thanks to the long thread.
- When applying the torque, the cone bolt is pulled into the expansion sleeve and expand it against the drill hole wall.
- The anchor is set in line with the approval once the preset installation torque is achieved.
- In the case of series installation, we recommend using the FABS anchor bolt setting tool.



TECHNICAL DATA



Bolt anchor FAZ II



galvanized

Article name	Art.-No.	Approval		Drill hole diameter d_0 [mm]	Anchor length l [mm]	max. fixture thickness (standard) t_{fix} [mm]	max. fixture thickness (reduced) t_{fix} [mm]	Anchorage depth (reduced) $h_{ef, red.}$ [mm]
FAZ II 8/10	094871	■		8	75	10		
FAZ II 8/30	094877	■		8	95	30		
FAZ II 8/50	094878	■		8	115	50		
FAZ II 8/100	094879	■		8	165	100		
FAZ II 8/160	503251	■		8	225	160		
FAZ II 10/10	094981	■		10	95	10	30	40
FAZ II 10/20	094982	■		10	105	20	40	40
FAZ II 10/30	094983	■		10	115	30	50	40
FAZ II 10/50	094984	■		10	135	50	70	40
FAZ II 10/80	094985	■		10	165	80	100	40
FAZ II 10/100	094986	■		10	185	100	120	40
FAZ II 10/160	503252	■		10	245	160	180	40
FAZ II 12/10	095419	■		12	110	10	30	50
FAZ II 12/20	095420	■		12	120	20	40	50
FAZ II 12/30	095421	■		12	130	30	50	50
FAZ II 12/50	095446	■		12	150	50	70	50
FAZ II 12/80	095454	■		12	180	80	100	50
FAZ II 12/100	095470	■		12	200	100	120	50
FAZ II 12/160	503253	■		12	260	160	180	50
FAZ II 12/200	095605	■		12	300	200	220	50
FAZ II 16/5	522124	■		16	128	5	25	65
FAZ II 16/25	095836	■		16	148	25	45	65
FAZ II 16/50	095864	■		16	173	50	70	65
FAZ II 16/100	095865	■		16	223	100	120	65
FAZ II 16/160	503254	■		16	283	160	180	65
FAZ II 16/200	095967	■		16	323	200	220	65
FAZ II 16/250	095968	■		16	373	250	270	65
FAZ II 16/300	096188	■		16	423	300	320	65
FAZ II 20/30	046632	■		20	172	30		
FAZ II 20/60	046633	■		20	202	60		
FAZ II 20/160	503255	■		20	302	160		
FAZ II 24/30	046635	■		24	205	30		
FAZ II 24/60	046636	■		24	235	60		

A4

Article name	Art.-No.	Approval		Drill hole diameter d_0 [mm]	Anchor length l [mm]	max. fixture thickness (standard) t_{fix} [mm]	max. fixture thickness (reduced) t_{fix} [mm]	Anchorage depth (reduced) $h_{ef, red.}$ [mm]
FAZ II 8/10 A4	**501396**	■		8	75	10		
FAZ II 8/30 A4	**501399**	■		8	95	30		
FAZ II 8/50 A4	**501401**	■		8	115	50		
FAZ II 10/10 A4	**501403**	■		10	95	10	30	40
FAZ II 10/20 A4	**501406**	■		10	105	20	40	40
FAZ II 10/30 A4	**501407**	■		10	115	30	50	40
FAZ II 10/50 A4	**501409**	■		10	135	50	70	40
FAZ II 10/70 A4	**501410**	■		10	155	70	90	40
FAZ II 10/160 A4	**501412**	■		10	245	160	180	40
FAZ II 12/10 A4	**501413**	■		12	110	10	30	50
FAZ II 12/20 A4	**501415**	■		12	120	20	40	50
FAZ II 12/30 A4	**501416**	■		12	130	30	50	50
FAZ II 12/50 A4	**501419**	■		12	150	50	70	50
FAZ II 12/60 A4	**501420**	■		12	160	80	100	50
FAZ II 12/100 A4	**501421**	■		12	200	100	120	50
FAZ II 12/160 A4	**503180**	■		12	260	160	180	50
FAZ II 16/5 A4	**522125**	■		16	128	5	25	65
FAZ II 16/25 A4	**501423**	■		16	148	25	45	65
FAZ II 16/50 A4	**501424**	■		16	173	50	70	65
FAZ II 16/100 A4	**501425**	■		16	223	100	120	65
FAZ II 20/30 A4	**501426**	■		20	172	30		
FAZ II 20/60 A4	**503183**	■		20	202	60		
FAZ II 24/30 A4	**501427**	■		24	205	30		
FAZ II 24/60 A4	**503184**	■		24	235	60		

highly corrosion-resistant

Article name	Art.-No.	Approval		Drill hole diameter d_0 [mm]	Anchor length l [mm]	max. fixture thickness (standard) t_{fix} [mm]	max. fixture thickness (reduced) t_{fix} [mm]	Anchorage depth (reduced) $h_{ef, red.}$ [mm]
FAZ II 8/10 C	**501428**	■		8	75	10		
FAZ II 8/30 C	**501429**	■		8	95	30		
FAZ II 10/10 C	**501430**	■		10	95	10	30	40
FAZ II 10/30 C	**503185**	■		10	115	30	50	40
FAZ II 12/10 C	**503186**	■		12	110	10	30	50
FAZ II 12/30 C	**501431**	■		12	130	30	50	50
FAZ II 16/25 C	**501432**	■		16	148	25	45	65
FAZ II 16/50 C	**503187**	■		16	173	50	70	65

LOADS

Bolt anchor FAZ II

Highest permissible loads for a single anchor[1] in concrete C20/25[4]

For the design the complete approval ETA - 05/0069 has to be considered.

					Cracked concrete				Non-cracked concrete			
Type	**minimum effective anchorage depth** $h_{ef,min}$ **[mm]**	**maximum effective anchorage depth** $h_{ef,max}$ **[mm]**	**minimum member thickness**[5] h_{min} **[mm]**	**torque moment** T_{inst} **[Nm]**	**permissible tensile load** N_{perm}[3] **[kN]**	**permissible shear load** V_{perm}[3] **[kN]**	**min. spacing** s_{min}[2] **[mm]**	**min. edge distance** c_{min}[2] **[mm]**	**permissible tensile load** N_{perm}[3] **[kN]**	**permissible shear load** V_{perm}[3] **[kN]**	**min. spacing** s_{min}[2] **[mm]**	**min. edge distance** c_{min}[2] **[mm]**
FAZ II 8		45	100	20,0	2,4	6,9	35	40	4,3	6,9	40	40
FAZ II 10	40		80	45,0	4,3	8,7	40	45	6,1	11,4	40	45
		60	120	45,0	4,3	11,4	40	45	7,6	11,4	40	45
FAZ II 12	50		100	60,0	6,1	13,9	45	55	8,5	16,9	50	55
		70	140	60,0	7,6	16,9	45	55	11,9	16,9	50	55
FAZ II 16	65		140	110,0	9,0	20,7	60	65	12,6	29,0	60	65
		85	170	110,0	13,4	31,4	60	65	18,8	31,4	60	65
FAZ II 20		100	200	200,0	17,1	40,0	95	85	24,0	40,0	95	95
FAZ II 24		125	250	270,0	24,0	49,1	100	100	33,6	49,1	100	135

[1] The partial safety factors for material resistance as regulated in the approval as well as a partial safety factor for load actions of γ_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 approval.

[2] Minimum possible axial spacings resp. edge distance while reducing the permissible load for the minimum member thickness ($h_{min} \geqq 2 \times h_{ef}$). The combination of the given min. spacing and min. edge distance is not possible. One of them has to be increased according approval.

[3] For combination of tensile loads, shear loads, bending moments as well as reduced edge distances or spacings (anchor groups) see approval.

[4] For higher concrete strength classes up to C50/60 higher permissible loads may be possible.

[5] According approval the minimum member thickness ($h_{min} \geqq 2 \times h_{ef}$) can be reduced under specific conditions.

LOADS

Bolt anchor FAZ II A4

Highest permissible loads for a single anchor[1] in concrete C20/25[4]

For the design the complete approval ETA - 05/0069 has to be considered.

					gerissener Beton				ungerissener Beton			
Type	**minimum effective anchorage depth** $h_{ef,min}$ **[mm]**	**maximum effective anchorage depth** $h_{ef,max}$ **[mm]**	**minimum member thickness**[5] h_{min} **[mm]**	**torque moment** T_{inst} **[Nm]**	**permissible tensile load** N_{perm}[3] **[kN]**	**permissible shear load** V_{perm}[3] **[kN]**	**min. spacing** s_{min}[2] **[mm]**	**min. edge distance** c_{min}[2] **[mm]**	**permissible tensile load** N_{perm}[3] **[kN]**	**permissible shear load** V_{perm}[3] **[kN]**	**min. spacing** s_{min}[2] **[mm]**	**min. edge distance** c_{min}[2] **[mm]**
FAZ II 8 A4		45	100	20,0	2,4	6,9	35	40	4,3	6,9	40	40
FAZ II 10 A4	40		80	45,0	4,3	8,7	40	45	6,1	11,4	40	45
		60	120	45,0	4,3	11,4	40	45	7,6	11,4	40	45
FAZ II 12 A4	50		100	60,0	6,1	13,9	45	55	8,5	16,9	50	55
		70	140	60,0	7,6	16,9	45	55	11,9	16,9	50	55
FAZ II 16 A4	65		140	110,0	9,0	20,7	60	65	12,6	29,0	60	65
		85	170	110,0	13,4	31,4	60	65	18,8	31,4	60	65
FAZ II 20 A4		100	200	200,0	17,1	40,0	95	85	24,0	40,0	95	95
FAZ II 24 A4		125	250	270,0	24,0	49,1	100	100	33,6	49,1	100	135

[1] The partial safety factors for material resistance as regulated in the approval as well as a partial safety factor for load actions of γ_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 approval.

[2] Minimum possible axial spacings resp. edge distance while reducing the permissible load for the minimum member thickness ($h_{min} \geqq 2 \times h_{ef}$). The combination of the given min. spacing and min. edge distance is not possible. One of them has to be increased according approval.

[3] For combination of tensile loads, shear loads, bending moments as well as reduced edge distances or spacings (anchor groups) see approval.

[4] For higher concrete strength classes up to C50/60 higher permissible loads may be possible.

[5] According approval the minimum member thickness ($h_{min} \geqq 2 \times h_{ef}$) can be reduced under specific conditions.

LOADS

Bolt anchor FAZ II C

Highest permissible loads for a single anchor[1] in concrete C20/25[4]

For the design the complete approval ETA - 05/0069 has to be considered.

					Cracked concrete				Non-cracked concrete			
Type	**minimum effective anchorage depth** $h_{ef,min}$ **[mm]**	**maximum effective anchorage depth** $h_{ef,max}$ **[mm]**	**minimum member thickness**[5] h_{min} **[mm]**	**torque moment** T_{inst} **[Nm]**	**permissible tensile load** N_{perm}[3] **[kN]**	**permissible shear load** V_{perm}[3] **[kN]**	**min. spacing** s_{min}[2] **[mm]**	**min. edge distance** c_{min}[2] **[mm]**	**permissible tensile load** N_{perm}[3] **[kN]**	**permissible shear load** V_{perm}[3] **[kN]**	**min. spacing** s_{min}[2] **[mm]**	**min. edge distance** c_{min}[2] **[mm]**
FAZ II 8 C		45	100	20,0	2,4	6,9	35	40	4,3	6,9	40	40
FAZ II 10 C	40		80	45,0	4,3	8,7	40	45	6,1	11,4	40	45
		60	120	45,0	4,3	11,4	40	45	7,6	11,4	40	45
FAZ II 12 C	50		100	60,0	6,1	13,9	45	55	8,5	16,9	50	55
		70	140	60,0	7,6	16,9	45	55	11,9	16,9	50	55
FAZ II 16 C	65		140	110,0	9,0	20,7	60	65	12,6	29,0	60	65
		85	170	110,0	13,4	31,4	60	65	18,8	31,4	60	65
FAZ II 20 C		100	200	200,0	17,1	40,0	95	85	24,0	40,0	95	95
FAZ II 24 C		125	250	270,0	24,0	49,1	100	100	33,6	49,1	100	135

[1] The partial safety factors for material resistance as regulated in the approval 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 approval.

[2] Minimum possible axial spacings resp. edge distance while reducing the permissible load for the minimum member thickness ($h_{min} \geqq 2 \times h_{ef}$). The combination of the given min. spacing and min. edge distance is not possible. One of them has to be increased according approval.

[3] For combination of tensile loads, shear loads, bending moments as well as reduced edge distances or spacings (anchor groups) see approval.

[4] For higher concrete strength classes up to C50/60 higher permissible loads may be possible.

[5] According approval the minimum member thickness ($h_{min} \geqq 2 \times h_{ef}$) can be reduced under specific conditions.

LOADS

Bolt anchor FAZ II GS

Highest permissible loads for a single anchor[1] in concrete C20/25[4]

For the design the complete approval ETA - 05/0069 has to be considered.

					Cracked concrete				Non-cracked concrete			
Type	**minimum effective anchorage depth** $h_{ef,min}$ **[mm]**	**maximum effective anchorage depth** $h_{ef,max}$ **[mm]**	**minimum member thickness**[5] h_{min} **[mm]**	**torque moment** T_{inst} **[Nm]**	**permissible tensile load** N_{perm}[3] **[kN]**	**permissible shear load** V_{perm}[3] **[kN]**	**min. spacing** s_{min}[2] **[mm]**	**min. edge distance** c_{min}[2] **[mm]**	**permissible tensile load** N_{perm}[3] **[kN]**	**permissible shear load** V_{perm}[3] **[kN]**	**min. spacing** s_{min}[2] **[mm]**	**min. edge distance** c_{min}[2] **[mm]**
FAZ II 8 GS		45	100	20,0	2,4	6,9	35	40	4,3	6,9	40	40
FAZ II 10 GS	40		80	45,0	4,3	8,7	40	45	6,1	11,4	40	45
		60	120	45,0	4,3	11,4	40	45	7,6	11,4	40	45
FAZ II 12 GS	50		100	60,0	6,1	13,9	45	55	8,5	16,9	50	55
		70	140	60,0	7,6	16,9	45	55	11,9	16,9	50	55
FAZ II 16 GS	65		140	110,0	9,0	20,7	60	65	12,6	29,0	60	65
		85	170	110,0	13,4	31,4	60	65	18,8	31,4	60	65

[1] The partial safety factors for material resistance as regulated in the approval 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 approval.

[2] Minimum possible axial spacings resp. edge distance while reducing the permissible load for the minimum member thickness ($h_{min} \geqq 2 \times h_{ef}$). The combination of the given min. spacing and min. edge distance is not possible. One of them has to be increased according approval.

[3] For combination of tensile loads, shear loads, bending moments as well as reduced edge distances or spacings (anchor groups) see approval.

[4] For higher concrete strength classes up to C50/60 higher permissible loads may be possible.

[5] According approval the minimum member thickness ($h_{min} \geqq 2 \times h_{ef}$) can be reduced under specific conditions.

LOADS

Bolt anchor FAZ II GS A4

Highest permissible loads for a single anchor[1] in concrete C20/25[4]

For the design the complete approval ETA - 05/0069 has to be considered.

					Cracked concrete				Non-cracked concrete			
Type	**minimum effective anchorage depth** $h_{ef,min}$ **[mm]**	**maximum effective anchorage depth** $h_{ef,max}$ **[mm]**	**minimum member thickness**[5] h_{min} **[mm]**	**torque moment** T_{inst} **[Nm]**	**permissible tensile load** N_{perm}[3] **[kN]**	**permissible shear load** V_{perm}[3] **[kN]**	**min. spacing** s_{min}[2] **[mm]**	**min. edge distance** c_{min}[2] **[mm]**	**permissible tensile load** N_{perm}[3] **[kN]**	**permissible shear load** V_{perm}[3] **[kN]**	**min. spacing** s_{min}[2] **[mm]**	**min. edge distance** c_{min}[2] **[mm]**
FAZ II 8 GS A4		45	100	20,0	2,4	6,9	35	40	4,3	6,9	40	40
FAZ II 10 GS A4	40		80	45,0	4,3	8,7	40	45	6,1	11,4	40	45
		60	120	45,0	4,3	11,4	40	45	7,6	11,4	40	45
FAZ II 12 GS A4	50		100	60,0	6,1	13,9	45	55	8,5	16,9	50	55
		70	140	60,0	7,6	16,9	45	55	11,9	16,9	50	55
FAZ II 16 GS A4	65		140	110,0	9,0	20,7	60	65	12,6	29,0	60	65
		85	170	110,0	13,4	31,4	60	65	18,8	31,4	60	65

[1] The partial safety factors for material resistance as regulated in the approval 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 approval.

[2] Minimum possible axial spacings resp. edge distance while reducing the permissible load for the minimum member thickness ($h_{min} \geqq 2 \times h_{ef}$). The combination of the given min. spacing and min. edge distance is not possible. One of them has to be increased according approval.

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