

## ZYKON Bolt anchor FZA

zinc plated steel / stainless steel

Permissible loads of a single anchor in cracked normal concrete (concrete tension zone) of strength class C20/25 (~B25) <sup>1) 2) 3) 8)</sup>										Minimum spacings while reducing the load	
Type	Material fixing element	Minimum member thickness	Effective anchorage depth	Installation torque	Permissible tensile load	Permissible shear load	Required edge distance (with one edge) for		Required spacing for	Min. spacing	Min. edge distance
							Max. tension load c	Max. shear load c			
		h <sub>min</sub> [mm]	h <sub>ef</sub> [mm]	T <sub>inst</sub> [Nm]	N <sub>perm</sub> <sup>4)</sup> [kN]	V <sub>perm</sub> <sup>4)</sup> [kN]	[mm]	[mm]	[mm]	[mm]	[mm]
FZA 10 x 40 M6	gvz	100	40	8,5	2,4	4,6	35	95	120	40	35
	A4					3,2		65			
FZA 12 x 40 M8	gvz	100	40	20	2,4	5,6	40	120	120	40	40
	A4										
FZA 12 x 50 M8	gvz	110	50	20	4,3	7,9	45	160	150	50	45
	A4					5,9		115			
FZA 14 x 40 M10	gvz	100	40	40	2,4	5,6	70	115	120	70	70
	A4										
FZA 14 x 60 M10	gvz	130	60	40	5,7	13,3	60	245	180	60	55
	A4					9,3		165			
FZA 18 x 80 M12	gvz	160	80	60	9,5	19,3	85	315	240	80	70
	A4					13,5		210			
FZA 22 x 100 M16	gvz	200	100	100	17,1	34,3	150	500	300	100	100
	A4					25,2		355			
FZA 22 x 125 M16	gvz	250	125	100	19,0	35,9	140	450	375	125	125
	A4					25,2		300			

For the design the complete assessment ETA-98/0004 has to be considered.<sup>7)</sup>

<sup>1)</sup> The partial safety factors for material resistance as regulated in the ETA-98/0004 as well as a partial safety factor for load actions of  $\gamma_L = 1,4$  are considered. As a single anchor counts e.g. an anchor with a spacing  $s \geq 3 \cdot h_{ef}$  and an edge distance  $c \geq 1,5 \cdot h_{ef}$ . Accurate data see ETA-98/0004.

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

<sup>3)</sup> Drill method hammer drilling.

<sup>4)</sup> For combinations of tensile loads, shear loads, bending moments as well as reduced edge distances or spacings (anchor groups) see ETA-98/0004.

<sup>5)</sup> Minimum possible axial spacings resp. edge distance while reducing the permissible load.

<sup>6)</sup> Minimum possible spacing resp. edge distance while reducing the permissible load for the required minimum member thickness. The combination of minimum edge distance and minimum spacing is not possible. One of both values has to be increased acc. ETA-98/0004.

<sup>7)</sup> The given loads refer to the European Technical Assessment ETA-98/0004, issue date 12/09/2016. Design of the loads according ETAG 001, Annex C, Method A (for static resp. quasi-static loads).

## ZYKON-Bolt anchor FZA

zinc plated steel / stainless steel

Permissible loads of a single anchor in non-cracked normal concrete (concrete compression zone) of strength class C20/25 (~B25) <sup>1)2)3)</sup>										Minimum spacings while reducing the load	
Type	Material fixing element	Minimum member thickness	Effective anchorage depth	Installation torque	Permissible tensile load	Permissible shear load	Required edge distance (with one edge) for		Required spacing for	Min. spacing	Min. edge distance
							Max. tension load c	Max. shear load c			
		h <sub>min</sub> [mm]	h <sub>ef</sub> [mm]	T <sub>inst</sub> [Nm]	N <sub>perm</sub> <sup>4)</sup> [kN]	V <sub>perm</sub> <sup>4)</sup> [kN]	[mm]	[mm]	[mm]	[mm]	[mm]
FZA 10 x 40 M6	gvz	100	40	8,5	3,6	4,6	40	65	120	40	35
	A4					3,2		50			
FZA 12 x 40 M8	gvz	100	40	20	3,6	7,9	40	120	120	40	40
	A4					5,9		85			
FZA 12 x 50 M8	gvz	110	50	20	5,7	8,4	45	115	150	50	45
	A4					5,9		75			
FZA 14 x 40 M10	gvz	100	40	40	3,6	7,9	70	115	120	70	70
	A4										
FZA 14 x 60 M10	gvz	130	60	40	9,5	13,3	75	170	180	60	55
	A4					9,3		110			
FZA 18 x 80 M12	gvz	160	80	60	14,3	19,3	95	210	240	80	70
	A4					13,5		140			
FZA 22 x 100 M16	gvz	200	100	100	19,0	35,9	110	355	300	100	100
	A4					25,2		235			
FZA 22 x 125 M16	gvz	250	125	100	19,0	35,9	125	300	375	125	125
	A4					25,2		195			

For the design the complete assessment ETA-98/0004 has to be considered.<sup>7)</sup>

<sup>1)</sup> The partial safety factors for material resistance as regulated in the ETA-98/0004 as well as a partial safety factor for load actions of  $\gamma_L = 1,4$  are considered. As a single anchor counts e.g. an anchor with a spacing  $s \geq 3 \cdot h_{ef}$  and an edge distance  $c \geq 1,5 \cdot h_{ef}$ . Accurate data see ETA-98/0004.

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

<sup>3)</sup> Drill method hammer drilling.

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<sup>5)</sup> Minimum possible axial spacings resp. edge distance while reducing the permissible load.

<sup>6)</sup> Minimum possible spacing resp. edge distance while reducing the permissible load for the required minimum member thickness. The combination of minimum edge distance and minimum spacing is not possible. One of both values has to be increased acc. ETA-98/0004.

<sup>7)</sup> The given loads refer to the European Technical Assessment ETA-98/0004, issue date 12/09/2016. Design of the loads according ETAG 001, Annex C, Method A (for static resp. quasi-static loads).