

# LOADS

## Highbond anchor FHB II <sup>1)</sup>

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 <sup>2) 3) 4)</sup>										Minimum spacings while reducing the load	
Type	Material fixing element	Min. 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>5)</sup> [kN]	V <sub>perm</sub> <sup>5)</sup> [kN]	[mm]	[mm]	[mm]	[mm]	[mm]
FHB II-A L M8 x 60	gvz	100	60	15	8,0 <sup>1)</sup>	7,8	150	163	180	40	40
	A4-70					8,7		183			
	C-70										
FHB II-A S M10 x 60	gvz	100	60	15	8,0 <sup>1)</sup>	11,3	150	245	180	40	40
	A4-70					13,8		306			
	C-70										
FHB II-A S M10 x 75	gvz	120	75	15	11,1	11,3	150	215	225	40	40
	A4-70					13,8		269			
FHB II-A L M10 x 95	gvz	140	95	20	15,9	11,9	238	197	285	40	40
	A4-70					13,3		224			
	C-70										
FHB II-A S M12 x 75	gvz	120	75	30	11,1	15,6	150	304	225	40	40
	A4-70					19,3		384			
	C-70										
FHB II-A L M12 x 100	gvz	140	100	40	17,1	17,3	190	296	300	50	50
	A4-70					19,3		334			
FHB II-A L M12 x 120	gvz	170	120	40	22,5	17,3	300	259	360	50	50
	A4-70					19,3		292			
	C-70										
FHB II-A S M16 x 95	gvz	150	95	50	15,9	29,0	170	506	285	50	50
	A4-70					31,7		559			
	C-70										
FHB II-A L M16 x 125	gvz	170	125	60	24,0	32,2	188	505	375	55	55
	A4-70					35,8		570			
FHB II-A L M16 x 145	gvz	190	145	60	29,9	32,2	250	464	435	60	60
	A4-70					35,8		525			
FHB II-A L M16 x 160	gvz	220	160	60	34,7	32,2	290	423	480	70	70
	A4-70					35,8		479			
	C-70										
FHB II-A S M20 x 170	gvz	240	170	100	38,0	45,9	255	571	510	80	80
	A4-70					55,9		719			
FHB II-A L M20 x 210	gvz	280	210	100	52,2	50,2	315	563	630	90	90
	A4-70					55,9		639			
	C-70										
FHB II-A S M24 x 170	gvz	240	170	100	38,0	65,3	255	857	510	80	80
	A4-70					71,1		946			
	C-70					76,0		1019			
FHB II-A L M24 x 210	gvz	280	210	100	52,2	72,5	315	863	630	90	90
	A4-70					80,6		974			

For the design the complete assessment ETA-05/0164 has to be considered. <sup>7)</sup>

<sup>1)</sup> Valid for injection mortar FIS HB. For using the glass capsule FHB II-P or FHB II-PF see ETA-05/0164.

<sup>2)</sup> The partial safety factors for material resistance as regulated in the ETA-05/0164 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  $s \geq 3 \cdot h_{ef}$  and an edge distance  $c \geq 1.5 \cdot h_{ef}$ . Accurate data see ETA-05/0164.

<sup>3)</sup> For higher concrete strength classes up to C50/60 higher permissible loads may be possible.

<sup>4)</sup> Drill method Hammer drilling.

<sup>5)</sup> For combinations of tensile loads, shear loads, bending moments as well as reduced edge distances or spacings (anchor groups) see ETA-05/0164.

<sup>6)</sup> Minimum possible axial spacings resp. edge distance while reducing the permissible load.

<sup>7)</sup> The given loads refer to the assessment ETA-05/0164, issue date 14/12/2017. Design of the loads according ETAG 001, Annex C, Method A (for static resp. quasi-static loads).

# LOADS

## Highbond anchor FHB II <sup>1)</sup>

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 <sup>2)3)4)</sup>										Minimum spacings while reducing the load	
Type	Material fixing element	Min. 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>5)</sup> [kN]	V <sub>perm</sub> <sup>5)</sup> [kN]	[mm]	[mm]	[mm]	[mm]	[mm]
FHB II-A L M8 x 60	gvz	100	60	15	11,2 <sup>1)</sup>	7,8	150	110	180	40	40
	A4-70										
	C-70										
FHB II-A S M10 x 60	gvz	100	60	15	11,2 <sup>1)</sup>	11,3	150	166	180	40	40
	A4-70										
	C-70										
FHB II-A S M10 x 75	gvz	120	75	15	12,0	11,3	103	145	225	40	40
	A4-70					13,8		183			
FHB II-A L M10 x 95	gvz	140	95	20	16,4	11,9	139	131	285	40	40
	A4-70										
	C-70										
FHB II-A S M12 x 75	gvz	120	75	30	15,6	15,6	150	206	225	40	40
	A4-70										
	C-70										
FHB II-A L M12 x 100	gvz	140	100	40	23,7	17,3	187	198	300	50	50
	A4-70					19,3		225			
FHB II-A L M12 x 120	gvz	170	120	40	23,7	17,3	179	172	360	50	50
	A4-70										
	C-70										
FHB II-A S M16 x 95	gvz	150	95	50	22,3	29,0	170	343	285	50	50
	A4-70										
	C-70										
FHB II-A L M16 x 125	gvz	170	125	60	33,6	32,2	188	339	375	55	55
	A4-70					35,8		384			
FHB II-A L M16 x 145	gvz	190	145	60	42,0	32,2	250	310	435	60	60
	A4-70					35,8		352			
FHB II-A L M16 x 160	gvz	220	160	60	46,0	32,2	270	282	480	70	70
	A4-70										
	C-70										
FHB II-A S M20 x 170	gvz	240	170	100	53,3	45,9	255	380	510	80	80
	A4-70					55,9		481			
FHB II-A L M20 x 210	gvz	280	210	100	65,5	50,2	273	372	630	90	90
	A4-70										
	C-70										
FHB II-A S M24 x 170	gvz	240	170	100	53,3	65,3	255	576	510	80	80
	A4-70					71,1		637			
	C-70					80,6		735			
FHB II-A L M24 x 210	gvz	280	210	100	65,5	72,5	273	578	630	90	90
	A4-70					80,6		654			

For the design the complete assessment ETA-05/0164 has to be considered. <sup>7)</sup>

<sup>1)</sup> Valid for injection mortar FIS HB. For using the glass capsule FHB II-P or FHB II-PF see ETA-05/0164.

<sup>2)</sup> The partial safety factors for material resistance as regulated in the ETA-05/0164 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  $s \geq 3 \cdot h_{ef}$  and an edge distance  $c \geq 1.5 \cdot h_{ef}$ . Accurate data see ETA-05/0164.

<sup>3)</sup> For higher concrete strength classes up to C50/60 higher permissible loads may be possible.

<sup>4)</sup> Drill method Hammer drilling.

<sup>5)</sup> For combinations of tensile loads, shear loads, bending moments as well as reduced edge distances or spacings (anchor groups) see ETA-05/0164.

<sup>6)</sup> Minimum possible axial spacings resp. edge distance while reducing the permissible load.

<sup>7)</sup> The given loads refer to the assessment ETA-05/0164, issue date 14/12/2017. Design of the loads according ETAG 001, Annex C, Method A (for static resp. quasi-static loads).