

Injection system FIS V, FIS VS and FIS VW with threaded rod FIS A<sup>5)</sup>

Highest permissible loads<sup>1) 6)</sup> for a single anchor in solid brick masonry for pre-positioned or push-through installation.

For the design the complete approval ETA-10/0383 has to be considered.

Type					Solid brick masonry			
	Compressive brick strength	Min. effective anchorage depth <sup>4)</sup>	Brick type, naming acc. DIN	Installation torque	Permissible tensile load <sup>3)</sup>	Permissible shear load <sup>3)</sup>	Min. spacing <sup>2)</sup>	Min. edge distance <sup>2)</sup>
	$f_b$ [N/mm <sup>2</sup> ]	$h_{ef,min}$ [mm]	[-] [-]	$T_{inst}$ [Nm]	$N_{perm}$ [kN]	$V_{perm}$ [kN]	$s_{min}$ [mm]	$c_{min}$ [mm]
<b>Solid brick Mz</b>								
M8	10	50	Mz	4,0	0,43	0,71	80	50
M10	10	50	Mz	4,0	0,57	0,71	80	50
M12	10	50	Mz	4,0	0,71	0,71	80	50
M16	10	64	Mz	4,0	0,71	0,71	80	55
M8	16	50	Mz	4,0	0,57	0,86	80	50
M10	16	50	Mz	4,0	0,71	0,86	80	50
M12	16	50	Mz	4,0	0,86	1,00	80	50
M16	16	64	Mz	4,0	1,00	1,14	80	55
<b>Solid sand-lime brick and solid block KS</b>								
M8	10	50	KS (2DF)	4,0	0,43	0,71	80	50
M10	10	50	KS (2DF)	4,0	0,43	0,71	80	50
M12	10	50	KS (2DF)	4,0	0,43	0,71	80	50
M16	10	64	KS (2DF)	4,0	0,57	0,71	80	55
M8	20	50	KS (2DF)	4,0	0,57	1,00	80	50
M10	20	50	KS (2DF)	4,0	0,71	1,00	80	50
M12	20	50	KS (2DF)	4,0	0,71	1,00	80	50
M16	20	64	KS (2DF)	4,0	0,71	1,00	80	55
M8	10	50	KS (8DF)	4,0	1,43	0,71	80	50
M10	10	50	KS (8DF)	4,0	1,43	0,71	80	50
M12	10	50	KS (8DF)	4,0	1,43	0,71	80	50
M16	10	64	KS (8DF)	4,0	2,57	0,86	80	55
M8	28	50	KS (8DF)	4,0	2,14	1,29	80	50
M10	28	50	KS (8DF)	4,0	2,57	1,29	80	50
M12	28	50	KS (8DF)	4,0	2,57	1,29	80	50
M16	28	64	KS (8DF)	4,0	2,57	1,43	80	55

<sup>1)</sup> The required partial safety factors for material resistance as well as a partial safety factor for load actions of  $\gamma_L = 1,4$  are considered.

<sup>2)</sup> Minimum possible axial spacings resp. edge distance while reducing the permissible load.

<sup>3)</sup> For combinations of tensile loads, shear loads, bending moments as well as reduced edge distances or spacings (anchor groups) see approval.

<sup>4)</sup> Max. effective anchorage depth 100 mm.

<sup>5)</sup> gvz, A4 and C.

<sup>6)</sup> The given loads are valid for fixations in dry and wet masonry for temperatures in the substrate up to +50°C (resp. short term up to 80°C) and best possible drillhole cleaning according approval.

## LOADS

### Injection system FIS V, FIS VS and FIS VW with threaded rod FIS A<sup>5)</sup> and anchor sleeve FIS H..K.

Highest permissible loads<sup>1) 6)</sup> for a single anchor in solid brick masonry for pre-positioned installation.

For the design the complete approval ETA-10/0383 has to be considered.

Type	Compressive brick strength $f_b$ [N/mm <sup>2</sup> ]	Min. effective anchorage depth <sup>4)</sup> $h_{ef,min}$ [mm]	Brick type, naming acc. DIN [-] [-]	Installation torque $T_{inst}$ [Nm]	Solid brick masonry			
					Permissible tensile load <sup>3)</sup>	Permissible shear load <sup>3)</sup>	Min. spacing <sup>2)</sup>	Min. edge distance <sup>2)</sup>
					$N_{perm}$ [kN]	$V_{perm}$ [kN]	$s_{min}$ [mm]	$c_{min}$ [mm]
<b>Solid brick Mz</b>								
M8	10	85	Mz	4,0	0,71	0,86	80	50
M10	10	85	Mz	4,0	0,71	0,86	80	50
M8	16	85	Mz	4,0	0,71	1,14	80	50
M10	16	85	Mz	4,0	0,71	1,14	80	50
<b>Solid sand-lime brick and solid block KS</b>								
M8	10	85	KS (2DF)	4,0	0,43	0,86	80	50
M10	10	85	KS (2DF)	4,0	0,43	0,86	80	50
M8	20	85	KS (2DF)	4,0	0,57	1,29	80	50
M10	20	85	KS (2DF)	4,0	0,57	1,29	80	50
M8	10	85	KS (8DF)	4,0	1,43	0,86	80	50
M10	10	85	KS (8DF)	4,0	1,43	0,86	80	50
M8	28	85	KS (8DF)	4,0	2,57	1,43	80	50
M10	28	85	KS (8DF)	4,0	2,57	1,43	80	50
<b>Solid block of lightweight aggregate concrete without slots Vbl</b>								
M8	2	110	Vbl	4,0	0,57	0,43	80	50
M10	2	110	Vbl	4,0	0,57	0,43	80	50
M12	2	110	Vbl	4,0	0,71	0,43	80	60
M12	2	180	Vbl	4,0	1,00	0,43	80	60
M16	2	110	Vbl	4,0	0,71	0,43	80	60
M16	2	180	Vbl	4,0	1,00	0,43	80	60

<sup>1)</sup> The required partial safety factors for material resistance as well as a partial safety factor for load actions of  $\gamma_L = 1,4$  are considered.

<sup>2)</sup> Minimum possible axial spacings resp. edge distance while reducing the permissible load.

<sup>3)</sup> For combinations of tensile loads, shear loads, bending moments as well as reduced edge distances or spacings (anchor groups) see approval.

<sup>4)</sup> The max. anchorage depth is corresponding with the relevant anchor sleeves FIS H..K (see technical data).

<sup>5)</sup> gvz, A4 and C.

<sup>6)</sup> The given loads are valid for fixations in dry and wet masonry for temperatures in the substrate up to +50°C (resp. short term up to 80°C) and best possible drillhole cleaning according approval.

## LOADS

### Injection system FIS V, FIS VS and FIS VW with threaded rod FIS A<sup>5)</sup> resp. internal threaded socket FIS E<sup>5)</sup>.

Highest permissible loads<sup>1) 6)</sup> for a single anchor in solid brick masonry for pre-positioned installation.

For the design the complete approval Z-21.3-1824 has to be considered.

Type	Compressive brick strength $f_b$ [N/mm <sup>2</sup> ]	Effective anchorage depth <sup>4)</sup> $h_{ef}$ [mm]	Brick type, naming acc. DIN [-] [-]	Installation torque $T_{inst}$ [Nm]	Solid brick masonry		
					Permissible tensile load <sup>3)</sup>	Min. spacing <sup>2)</sup>	Min. edge distance <sup>2)</sup>
					$F_{perm}$ [kN]	$s_{min} (a_{min})$ [mm]	$c_{min} (a_r)$ [mm]
<b>Solid brick Mz</b>							
M6 - M8	12	75	Mz	2,0	1,00	50	60
M10 - M16	12	75	Mz	2,0	1,70	50	60
<b>Solid sand-lime brick and solid block KS</b>							
M6 - M8	12	75	KS	2,0	1,00	50	60
M10 - M16	12	75	KS	2,0	1,70	50	60

<sup>1)</sup> Required safety factors are considered.

<sup>2)</sup> Minimum possible axial spacings resp. edge distance while reducing the permissible load.

<sup>3)</sup> Valid for tensile load, shear load and oblique load under any angle. For combinations of tensile loads, shear loads, bending moments as well as reduced edge distances or spacings (anchor groups) see approval.

<sup>4)</sup> Values apply to threaded rod FIS A. When using the internal threaded socket FIS E (M6 to M12) the anchorage depth is 85 mm instead of 75 mm.

<sup>5)</sup> gvz and A4. For FIS E screw with grade 5.8 resp. A4-70.

<sup>6)</sup> The given loads are valid for fixations in dry and humid masonry for temperatures in the substrate up to +50°C (resp. short term up to 80°C) and best possible drillhole cleaning according approval.

## Injection system FIS V with threaded rod FIS A<sup>5)</sup> resp. internal threaded socket FIS E<sup>5)</sup> and anchor sleeve FIS H..K.

Highest permissible loads<sup>1) 6)</sup> for a single anchor in solid brick masonry for pre-positioned installation.

For the design the complete approval Z-2 1.3-1824 has to be considered.

Type	Compressive brick strength $f_b$ [N/mm <sup>2</sup> ]	Effective anchorage depth <sup>4)</sup> $h_{ef}$ [mm]	Brick type, naming acc. DIN [-] [-]	Installation torque $T_{inst}$ [Nm]	Solid brick masonry		
					Permissible tensile load <sup>3)</sup> $F_{perm}$ [kN]	Min. spacing <sup>2)</sup> $s_{min}$ ( $a_{min}$ ) [mm]	Min. edge distance <sup>2)</sup> $c_{min}$ ( $a_r$ ) [mm]
<b>Solid brick Mz</b>							
M6	12	50 - 85	Mz	2,0	1,00	50	60
M8	12	50 - 130	Mz	2,0	1,70 <sup>7)</sup>	50	60
M10	12	85 - 130	Mz	2,0	1,70	50	60
M12	12	85 - 130	Mz	2,0	1,70	50	60
M16	12	85 - 200	Mz	2,0	1,70	50	60
<b>Solid sand-lime brick and solid block KS</b>							
M6	12	50 - 85	KS	2,0	1,00	50	60
M8	12	50 - 130	KS	2,0	1,70 <sup>7)</sup>	50	60
M10	12	85 - 130	KS	2,0	1,70	50	60
M12	12	85 - 130	KS	2,0	1,70	50	60
M16	12	85 - 200	KS	2,0	1,70	50	60

<sup>1)</sup> Required safety factors are considered.

<sup>2)</sup> Minimum possible axial spacings resp. edge distance while reducing the permissible load.

<sup>3)</sup> Valid for tensile load, shear load and oblique load under any angle. For combinations of tensile loads, shear loads, bending moments as well as reduced edge distances or spacings (anchor groups) see approval.

<sup>4)</sup> The anchorage depth is corresponding with the relevant anchor sleeves FIS H..K (see technical data).

<sup>5)</sup> gvz and A4. For FIS E screw with grade 5.8 resp. A4-70.

<sup>6)</sup> The given loads are valid for fixations in dry and humid masonry for temperatures in the substrate up to +50°C (resp. short term up to 80°C) and best possible drillhole cleaning according approval.

<sup>7)</sup> For anchor sleeve FIS H 12x50K  $F_{perm} = 1,00$  kN.