

Chemical fastening systems



Fastening injection system ResiFIX

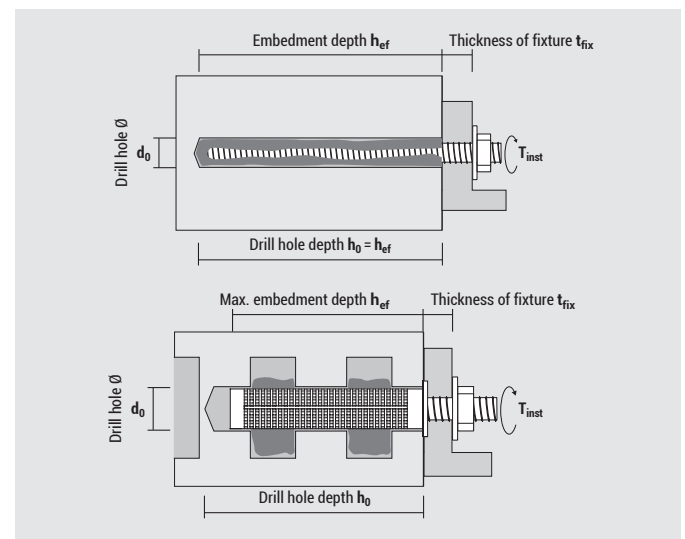


Typical applications

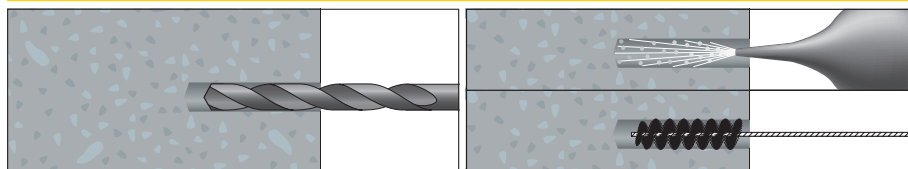
- Steel constructions
- Canopies
- Cantilevers
- Distance mountings
- Facade substructures
- Door and window frames
- Machines
- Wood constructions
- Guard rails

Suitable building materials

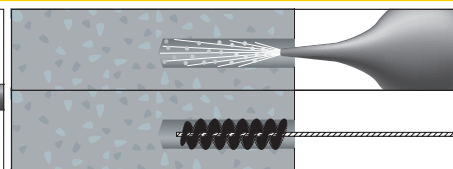
- ✓ Concrete
- ✓ Aerated concrete
- ✓ Natural stone
- ✓ Hollow brick
- ✓ Solid brick
- ✓ Hollow sand-lime brick
- ✓ Solid sand-lime brick
- ✓ Lightweight hollow concrete blocks
- ✓ Lightweight solid concrete blocks



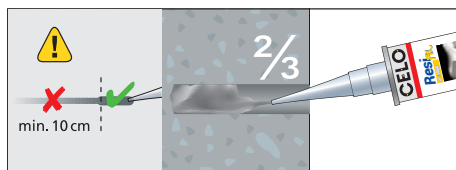
Mounting in concrete and solid brick



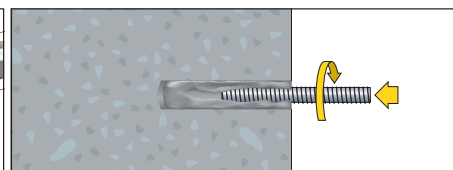
1. Drill hole



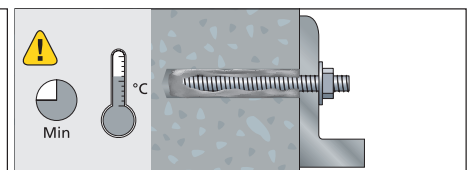
2. Clean hole (blow 4x, brush 4x)



3. Discard first 10 cm. Inject necessary amount of chemical mortar, (min. 2/3 of hole)

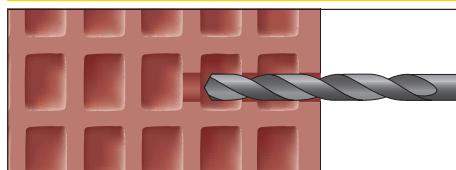


4. Push the anchor rod into the hole while turning

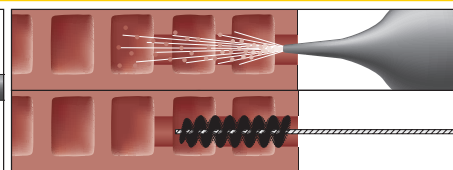


5. Respect curing time before applying any load or torque

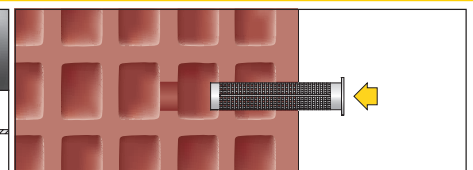
Mounting in hollow brick



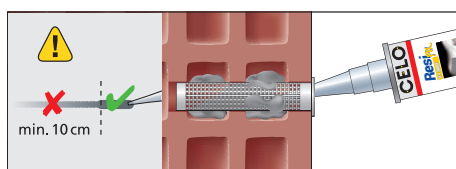
1. Drill hole



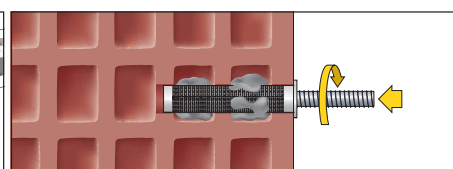
2. Clean hole (blow 2x, brush 2x)



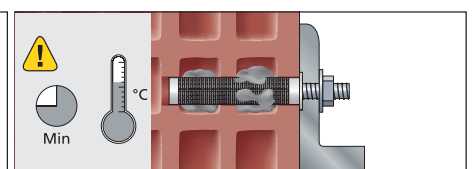
3. Insert anchor sleeve



4. Discard first 10 cm. Inject necessary amount of chemical mortar (fill sleeve completely)



5. Push the anchor rod into the hole while turning

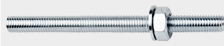


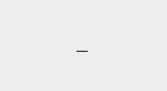
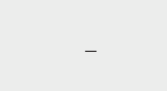






























6. Respect curing time before applying any load or torque



For everyone the appropriate system

In comparison

Type	Vinylester VYSF (styrene free)				Epoxyacrylate EYSF (styrene free)				Polyester PYSF (styrene free)				Pure Epoxy BRSF (styrene free)	
	300	345	410	300	300	345	410	300	165	300	345	410	385	585
Content [ml]	280	345	410	300	280	345	410	280	165	300	345	410	385	585
Types	Standard			Cool	Standard			Express	Standard				Standard	
Shelf life	18 months			12 mon.	18 months				12 months	18 months			24 months	
	steel 4.6, 5.8, 8.8				steel 4.6, 5.8, 8.8				steel 4.6, 5.8, 8.8			steel 4.6, 5.8, 8.8		
	stainless steel			✓	stainless steel			–	stainless steel			stainless steel		
Approval for post-installed rebar connections														
Approval for cracked concrete (Option 1)														
Approval for non-cracked concrete (Option 7)														
Approval for masonry													–	
Fire test certification (R 120)					–				–					
Usage under seismic action					–				–					
ICC Approval				–	–				–				–	
Emissions in closed spaces														
Performance in non-cracked concrete C20/25 (M10-90)														
Performance in hollow brick HLZ 12 (M10-130)													not suitable	
Wet drill holes	✓				✓				✓				✓	
Waterfilled drill holes	✓				✓				✓				✓	
Min. temp. of concrete	≥ -10°C		≥ -20°C		≥ -5°C		≥ -10°C		≥ -5°C			≥ +5°C		
Suitable for contact with drinking water	✓				✗				✗				✓	
Temp. range after curing	-40°C to +120°C				-40°C to +80°C				-40°C to +80°C			-40°C to +72°C		
Chemical resistance	very high				high				medium			excellent		
Odour	marginal				medium				medium			marginal		

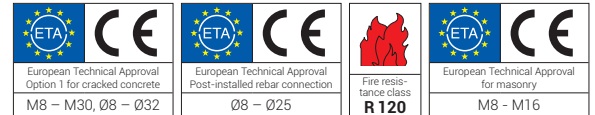
Risk of staining in natural stone! Before use, we recommend a 5-days test (there is no risk with Pure Epoxy BRSF).

All cartridges can be used until the expiration date by resealing with the cap or by replacing the static mixer.

Chemical fastening systems



ResiFIX assortment



Vinylester VYSF (styrene free)						Price	Packing
Type	Art-No	Content [ml]	Nozzles included [pcs]	Shelf life (unopened) [month]	€ / pc	[pcs]	
VY 300 SF	300VSF	280	2	18		12	
VY 345 SF	345VSF	345	2	18		12	
VY 410 SF	410VYSF	410	1	18		12	

Curing times and technical data, from page 96



Vinylester VYSF Cool (styrene free) for -20°C to +10°C						Price	Packing
Type	Art-No	Content [ml]	Nozzles included [pcs]	Shelf life (unopened) [month]	€ / pc	[pcs]	
VY 300 SF Cool	300VCSF	300	2	12		12	

Curing times and technical data, from page 96 seasonal article



VY 300 SF

Vinylester VYSF Tropical (styrene free) extended curing time						Price	Packing
Type	Art-No	Content [ml]	Nozzles included [pcs]	Shelf life (unopened) [month]	€ / pc	[pcs]	
VT 300 SF	300VTSF	280	2	18		12	

Curing times and technical data, from page 96



EY 300 SF



EY 345 SF



EY 410 SF



Epoxyacrylate (styrene free)						Price	Packing
Type	Art-No	Content [ml]	Nozzles included [pcs]	Shelf life (unopened) [month]	€ / pc	[pcs]	
EY 300 SF	300EYSF	280	2	18		12	
EY 345 SF	345EYSF	345	2	18		12	
EY 410 SF	410EYSF	410	1	18		12	

Curing times and technical data, from page 96



Epoxyacrylate EYSF Express (styrene free) reduced curing time, for -10°C to +30°C						Price	Packing
Type	Art-No	Content [ml]	Nozzles included [pcs]	Shelf life (unopened) [month]	€ / pc	[pcs]	
EY 300 SF Express	300EXSF	280	2	18		12	

Curing times and technical data, from page 96



ResiFIX assortment



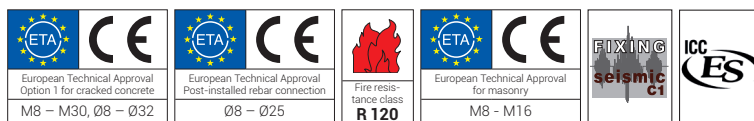
Polyester PYSF (styrene free)					Price	Packing
Type	Art-No	Content [ml]	Nozzles included [pcs]	Shelf life (unopened) [month]	€ / pc	[pcs]
PY 165 SF	165PSF	165	2	12		1 / 12
PY 300 SF	300PSF	300	1	12		12
PY 345 SF	345PSF	345	1	18		12
PY 410 SF	410PYSF	410	1	18		12

Curing times and technical data, from page 96



Pure Epoxy (styrene free)					Price	Packing
Type	Art-No	Content [ml]	Nozzles included [pcs]	Shelf life (unopened) [month]	€ / pc	[pcs]
BR 385 SF	385CRPE	385	1	24		12
BR 585 SF	585CRPE	585	1	24	on request	12
BR 1400 SF	1400CRPE	1400	1	24	on request	12

1 extension tube (length 200 mm) included
Curing times and technical data, from page 96



Universal box with ResiFIX VY 300 SF, VY 345 SF					Price	Packing
Type	Art-No	Content [cartridges]	Nozzles included [pcs]	Shelf life (unopened) [month]	€ / box	[pcs]
VY 300 SF in universal box	SYS300VSF20	20	40	18		1
VY 345 SF in universal box	SYS345VSF20	20	40	18		1

Curing times and technical data, from page 96



Universal box with ResiFIX PY 300 SF, PY 345 SF					Price	Packing
Type	Art-No	Content [cartridges]	Nozzles included [pcs]	Shelf life (unopened) [month]	€ / box	[pcs]
PY 300 SF in universal box	SYS300PSF20	20	20	12		1
PY 345 SF in universal box	SYS345PSF20	20	20	18		1

Curing times and technical data, from page 96

Chemical fastening systems



ResiFIX accessories



APP 300



APP 380



APVM



OL 385

Manual dispenser APP / APVM / OL				Price	Packing	
Type	Art-No	Suitable for ResiFIX type	€ / pc	[pcs]	[pcs]	[pcs]
APP 300	300APP	300 / 165		1		-
APP 380	380APP	410		1		-
APVM	345APVM	345 / 300 / 165		1		-
OL 385	385OL	385 / 585		1		-



Mixing nozzle MD transparent			Price	Packing		
Type	Art-No	Suitable cartridges	€ / pc	[pcs]	[pcs]	[pcs]
MD	9MRMEA	all except BR 385 SF		20		-

Mixing nozzle extension for MD			Price	Packing		
Type	Art-No	Length [mm]	€ / pc	[pcs]	[pcs]	[pcs]
MDV	9MDV	200		10		-



Blow out pump AB			Price	Packing		
Type	Art-No	Tube Ø [mm]	€ / pc	[pcs]	[pcs]	[pcs]
AB	BOP	8		1		-



Cleaning brush RBK nylon, for masonry				Price	Packing	
Type	Art-No	Length [mm]	Suitable for hole Ø [mm]	€ / pc	[pcs]	[pcs]
RBK Ø20	9PLRBK	300	≤ 20		5	-



Cleaning brush RBS steel, for concrete						Price	Packing	
Type	Art-No	Length [mm]	Suitable for hole Ø [mm]	Suitable for anchor rod	Connecting thread	€ / pc	[pcs]	[pcs]
RBS Ø12	9M12RBK	170	10	M8	M6		5	-
RBS Ø14	9M14RBK	170	12	M10	M6		5	-
RBS Ø16	9M16RBK	200	14	M12	M6		5	-
RBS Ø20	9M20RBK	200	18	M16	M6		5	-
RBS Ø26	9M26RBK	250	24	M20	M6		5	-
RBS Ø30	9M30RBK	300	28	M24	M6		5	-



MRBKV:
Extension
for RBS



MRBKH:
Handle
for RBS

Handle and Extension for RBS					Price	Packing	
Type	Art-No	Length [mm]	Suitable for RBS Ø	Connecting thread	€ / pc	[pcs]	[pcs]
MRBKV	MRBKV	140	all	M 6		5	-
MRBKH	MRBKH	-	all	M 6		5	-



ResiFIX accessories



Plastic sleeves SH						Price	Packing	
Type	Art-No	d ₀ [mm]	L [mm]	h ₀ [mm]	Suitable for thread Ø	€/100 pcs	[pcs]	[pcs]
SH 12-60 ¹⁾	91260SH	12	60	65	M6, M8		24	432
SH 12-80	91280SH	12	80	85	M6, M8		24	432
SH 16-85	91585SH	16	85	90	M8, M10		12	216
SH 16-130	915130SH	16	130	135	M8, M10		12	144
SH 20-85	92085SH	20	85	90	M12, M16		12	216
SH 20-130	920130SH	20	130	135	M12, M16		20	160
SH 20-200	920200SH	20	200	205	M12, M16		20	160

Note: The system (resin, sleeve and anchor rod) is only approved completely if approved components are used.

¹⁾ Not part of the ETA-approval



Metal sleeves SH-1000 can be cut individually (length 1m)					Price	Packing	
Type	Art-No	d ₀ [mm]	h ₀ [mm]	Suitable for thread Ø	€/pc	[pcs]	[pcs]
SH 12-1000	12TMRMEA	12	flexible	M6 – M8		10	–
SH 16-1000	16TMRMEA	16	flexible	M8 – M12		10	–
SH 22-1000	22TMRMEA	22	flexible	M12 – M16		8	–



Internal threaded sleeves IGH								Price	Packing	
Type	Art-No	d ₀ [mm]	h ₀ [mm]	Suitable for thread Ø	Thread L* [mm]	Outer Ø [mm]	Suitable for sleeve	€/100 pcs	[pcs]	[pcs]
IGH M8-80	9880IGH	14	90	M8	26	12	SH 16-85 SH 20-85		12	324
IGH M10-80	91080IGH	16	90	M10	26	14	SH 20-85		12	324
IGH M12-80	91280IGH	18	90	M12	26	16	SH 20-85		12	324

*Internal thread length



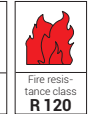
Heavy-duty sleeve ResiTHERM® S Set for heavy-duty applications in hollow / perforated brick walls					Price	Packing	
Type	Art-No	Set contains (packed in bag)	L [mm]	Insulation thickness h ₀ [mm]	€/set	[set]	[sets]
RTH S	RTHS2	2x ResiTHERM® S 2x Threaded stud M12x70 mm, stainless steel A4 2x Washer M12 DIN 125, stainless steel A4 2x Hexagon nut M12 DIN 934, stainless steel A4 1x ResiFIX VY300SF	125	0		1	10

For further information see page 106

Chemical fastening systems

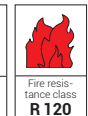


Anchor rods RESI AST



RESI AST zinc plated 5.8 with nut and washer

Type $d_s - L$	Art-No	in concrete					in solid brick		in perforated brick		Price €/ 100 pcs	Packing	
		d_0 [mm]	$h_{ef, min}$ [mm]	$t_{fix, max}$ for $h_{ef, min}$ [mm]	$h_{ef, Stand}^{1)}$ [mm]	$t_{fix, max}$ for $h_{ef, Stand}^{1)}$ [mm]	$d_0 - h_0$ [mm]	$t_{fix, max}$ [mm]	sleeve	$t_{fix, max}$ [mm]		☐ [pcs]	☐ [pcs]
M8-110	98110RAST	10	60	40	80	20	10-80	20	SH 12-80	20		10	100
M8-130	98130RAST	10	60	60	80	40	10-80	40	SH 12-80	40		10	100
M10-110	910110RAST	12	60	40	90	10	12-90	10	SH 16-85	15		10	100
M10-130	910130RAST	12	60	60	90	30	12-90	30	SH 16-85	35		10	100
M10-170	910170RAST	12	60	100	90	70	12-90	70	SH 16-85	75		10	100
M10-200	910200RAST	12	60	130	90	100	12-90	100	SH 16-85	105		10	60
M12-130	912130RAST	14	70	45	110	5	14-100	15	SH 20-85	30		10	100
M12-160	912160RAST	14	70	75	110	35	14-100	45	SH 20-85	60		10	100
M12-210	912210RAST	14	70	125	110	85	14-100	95	SH 20-85	110		10	60
M16-160	916160RAST	18	80	60	125	15	18-100	40	SH 20-85	60		10	60
M16-190	916190RAST	18	80	90	125	45	18-100	70	SH 20-85	90		10	60
M16-235	916235RAST	18	80	135	125	90	18-100	115	SH 20-85	135		10	40
M20-240	920240RAST	24	90	130	170	50	not suitable		not suitable			5	20
M24-300	924300RAST	28	96	180	210	65	not suitable		not suitable			5	20

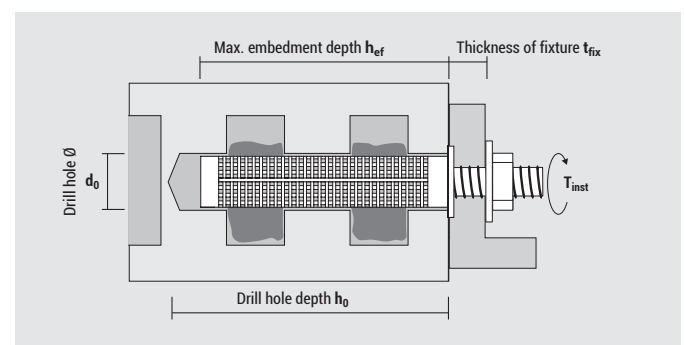
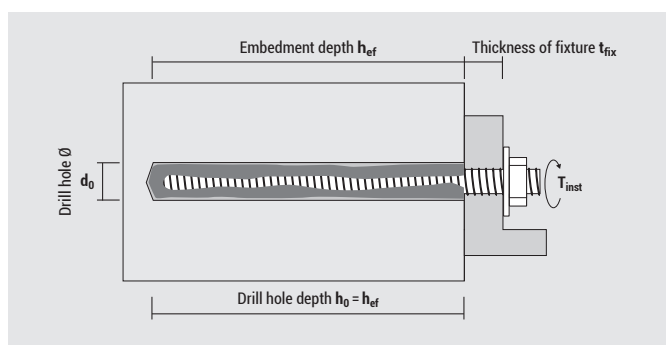


RESI AST stainless steel A4 with nut and washer

Type $d_s - L$	Art-No	in concrete					in solid brick		in perforated brick		Price €/ 100 pcs	Packing	
		d_0 [mm]	$h_{ef, min}$ [mm]	$t_{fix, max}$ for $h_{ef, min}$ [mm]	$h_{ef, Stand}^{1)}$ [mm]	$t_{fix, max}$ for $h_{ef, Stand}^{1)}$ [mm]	$d_0 - h_0$ [mm]	$t_{fix, max}$ [mm]	sleeve	$t_{fix, max}$ [mm]		☐ [pcs]	☐ [pcs]
M8-110	9X8110RAST	10	60	40	80	20	10-80	20	SH 12-80	20		10	100
M8-130	9X8130RAST	10	60	60	80	40	10-80	40	SH 12-80	40		10	100
M10-110	9X10110RAST	12	60	40	90	10	12-90	10	SH 16-85	15		10	100
M10-130	9X10130RAST	12	60	60	90	30	12-90	30	SH 16-85	35		10	100
M10-170	9X10170RAST	12	60	100	90	70	12-90	70	SH 16-85	75		10	100
M10-200	9X10200RAST	12	60	130	90	100	12-90	100	SH 16-85	105		10	60
M12-130	9X12130RAST	14	70	45	110	5	14-100	15	SH 20-85	30		10	100
M12-160	9X12160RAST	14	70	75	110	35	14-100	45	SH 20-85	60		10	100
M12-210	9X12210RAST	14	70	125	110	85	14-100	95	SH 20-85	110		10	60
M16-160	9X16160RAST	18	80	60	125	15	18-100	40	SH 20-85	60		10	60
M16-190	9X16190RAST	18	80	90	125	45	18-100	70	SH 20-85	90		10	60
M16-235	9X16235RAST	18	80	135	125	90	18-100	115	SH 20-85	135		10	40
M20-240	9X20240RAST	24	90	130	170	50	not suitable		not suitable			5	20
M24-300	9X24300RAST	28	96	180	210	65	not suitable		not suitable			5	20

Also suitable for ResiFIX: Anchor rods VA AST for the bonded anchor (with outer hexagon)
Further lengths, steel 8.8, hot-dip galvanized steel and stainless steel HCR on request

¹⁾ Standard embedment depth means the usually used embedment depth. Min. embedment depth according to ETA-approvals





ResiFIX curing times

Curing time Vinylester VYSF

Temperature of building material	[°C]	> -10 ¹⁾	> -5	> 0	> +5	> +10	> +20	> +30	> +40
Min. working time	[min]	90	90	45	25	15	6	4	1,5
Min. curing time ²⁾	[min]	24h	14h	7h	2h	80	45	25	15

¹⁾ Cartridge temp. min. 15 °C

²⁾ Double curing time in wet concrete

Curing time ResiFIX Vinylester VYSF Cool

Temperature of building material	[°C]	> -20	> -15	> -10	> -5	> 0	> +5	+10	X
Min. working time	[min]	75	55	35	20	10	6	6	
Min. curing time ¹⁾	[min]	24h	16h	10h	5h	2,5h	80	60	

¹⁾ Double curing time in wet concrete

Curing time Vinylester VYSF Tropical

Temperature of building material	[°C]	> -10 ¹⁾	> -5	> 0	> +5	> +10	> +20	> +30	> +40
Min. working time	[min]	180	180	90	50	30	12	8	3
Min. curing time ²⁾	[min]	48h	28h	14h	4h	160	90	48	30

¹⁾ Cartridge temp. min. 15 °C

²⁾ Double curing time in wet concrete

Curing time Epoxyacrylate EYSF

Temperature of building material	[°C]	> -10	> -5	> 0	> +5	> +10	> +20	> +30	> +40
Min. working time	[min]	–	90	45	25	20	6	4	1,5
Min. curing time ¹⁾	[min]	–	6h	3h	2h	100	45	25	15

¹⁾ Double curing time in wet concrete

Curing time ResiFIX Epoxyacrylate EYSF Express

Temperature of building material	[°C]	> -10	> -5	> 0	> +5	> +10	> +15	> +20	+30
Min. working time	[min]	60	45	25	10	4	3	2	1,5
Min. curing time ¹⁾	[min]	4h	2h	80	45	25	20	15	10

¹⁾ Double curing time in wet concrete

Curing time Polyester PYSF

Temperature of building material	[°C]	> -10	> -5	> 0	> +5	> +10	> +20	> +30	> +40
Min. working time	[min]	–	90	45	25	20	6	4	1,5
Min. curing time ¹⁾	[min]	–	6h	3h	2h	100	45	25	15

¹⁾ Double curing time in wet concrete

Curing time Pure Epoxy BRSF

Temperature of building material	[°C]	> -10	> -5	> 0	> +5	> +10	> +20	> +30	> +40
Min. working time	[min]	–	–	–	120	90	30	20	12
Min. curing time ¹⁾	[min]	–	–	–	50h	30h	10h	6h	4h

¹⁾ Double curing time in wet concrete



ResiFIX technical data in concrete

Fastening in concrete the professional system Vinylester VYSF (Standard and Cool)

Permissible loads F_{per} in [kN] in non-cracked (Option 7) concrete C20/25 and cracked (Option 1) concrete C20/25 for single anchor without influence of spacing and edge distance, installation parameters and unit dimensions. Total safety factors as per ETAG 001 included (γ_M und γ_F). Design according to TR029. See ETA-approval for design and calculations.

Anchor rods RESI AST, VA AST		M8	M10	M12	M16	M20	M24	M30
Drill hole \varnothing	d_0 [mm]	10	12	14	18	24	28	35
Embedment depth $h_{ef,min} / h_{ef,stand} / h_{ef,max}$	[mm]	60/80/160	60/90/200	70/110/240	80/125/320	90/170/400	96/210/480	120/280/600

Tension load ¹⁾²⁾ (24 °C / 40 °C) ³⁾ non-cracked concrete (dry or wet)

Zinc plated 5.8	N_{per} [kN]	7,2 / 8,6 / 8,6	9,0 / 13,5 / 13,8	11,7 / 19,7 / 20,0	14,3 / 28,0 / 37,1	17,1 / 44,4 / 58,1	18,8 / 61,0 / 83,8	26,3 / 93,4 / 133,3
Stainless steel A4	N_{per} [kN]	7,2 / 9,6 / 9,9	9,0 / 13,5 / 15,7	11,7 / 19,7 / 22,5	14,3 / 28,0 / 42,0	17,1 / 44,4 / 65,3	18,8 / 61,0 / 94,3	26,3 / 70,2 / 70,2

Tension load ¹⁾²⁾ (24 °C / 40 °C) ³⁾ cracked concrete (dry or wet)

Zinc plated 5.8	N_{per} [kN]	2,9 / 3,8 / 7,7	3,7 / 5,6 / 12,5	5,8 / 9,1 / 19,7	8,8 / 13,7 / 35,1	12,3 / 23,3 / 54,9	15,8 / 34,6 / 79,0	26,3 / 68,1 / 133,3
Stainless steel A4	N_{per} [kN]	2,9 / 3,8 / 7,7	3,7 / 5,6 / 12,5	5,8 / 9,1 / 19,7	8,8 / 13,7 / 35,1	12,3 / 23,3 / 54,9	15,8 / 34,6 / 79,0	26,3 / 68,1 / 70,2

Tension load ¹⁾²⁾ (50 °C / 80 °C) ³⁾ non-cracked concrete (dry or wet)

Zinc plated 5.8	N_{per} [kN]	5,4 / 7,2 / 8,6	6,7 / 10,1 / 13,8	9,4 / 14,8 / 20,0	14,3 / 22,4 / 37,6	17,1 / 38,1 / 58,6	18,8 / 53,4 / 83,8	26,3 / 68,1 / 133,3
Stainless steel A4	N_{per} [kN]	5,4 / 7,2 / 9,9	6,7 / 10,1 / 15,7	9,4 / 14,8 / 22,5	14,3 / 22,4 / 42,0	17,1 / 38,1 / 65,3	18,8 / 53,4 / 94,3	26,3 / 68,1 / 70,2

Tension load ¹⁾²⁾ (50 °C / 80 °C) ³⁾ cracked concrete (dry or wet)

Zinc plated 5.8	N_{per} [kN]	1,8 / 2,4 / 4,8	2,6 / 3,9 / 8,7	4,2 / 6,6 / 14,4	6,4 / 10,0 / 25,5	9,0 / 17,0 / 39,9	11,5 / 25,1 / 57,4	20,2 / 47,1 / 101,0
Stainless steel A4	N_{per} [kN]	1,8 / 2,4 / 4,8	2,6 / 3,9 / 8,7	4,2 / 6,6 / 14,4	6,4 / 10,0 / 25,5	9,0 / 17,0 / 39,9	11,5 / 25,1 / 57,4	20,2 / 47,1 / 70,2

Shear load ¹⁾ non-cracked concrete

Zinc plated 5.8	V_{per} [kN]	5,1	8,6	12,0	22,3	34,9	45,2 / 50,3 / 50,3	63,2 / 80 / 80,0
Stainless steel A4	V_{per} [kN]	6,0	9,2	13,7	25,2	39,4	45,2 / 56,8 / 56,8	42,0 / 80,0 / 80,0

Shear load ¹⁾ cracked concrete

Zinc plated 5.8	V_{per} [kN]	5,1	8,6	12,0	22,3	29,3 / 34,9 / 34,9	32,2 / 50,3 / 50,3	45,1 / 80,0 / 80,0
Stainless steel A4	V_{per} [kN]	6,0	9,2	13,7	25,2	29,3 / 50,3 / 39,4	32,2 / 56,8 / 56,8	42,0 / 80,0 / 80,0

Bending moment (Zinc plated 5.8)	M_{per} [Nm]	10,9	21,1	37,1	94,9	185,1	320,0	641,7
Bending moment (Stainless steel A4)	M_{per} [Nm]	11,9	23,8	42,1	106,2	207,9	359,0	337,6

Spacing and edge distance

Spacing ⁴⁾	$S_{cr,N}$ [mm]	185	253	304	375	506	581	657
Edge distance ⁴⁾	$C_{cr,N}$ [mm]	92	126	152	188	253	291	329
Minimum spacing distance	S_{min} [mm]	40	50	60	80	100	120	150
Minimum edge distance	C_{min} [mm]	40	50	60	80	100	120	150
Minimum thickness of concrete	h_{min} [mm]	$h_{ef} + 30 \text{ mm} \geq 100 \text{ mm}$				$h_{ef} + 2d_0$		
Maximum installation torque	$T_{inst} \leq$ [Nm]	10	20	40	80	120	160	200

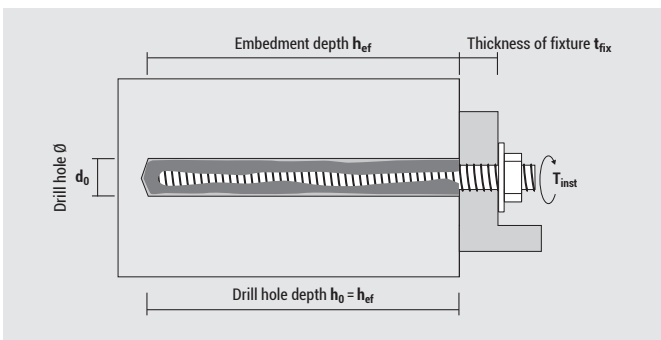
¹⁾ Values are valid for $h_{ef,min} / h_{ef,stand} / h_{ef,max}$.

²⁾ Increasing factors for cracked and non-cracked concrete C30/37 = 1.04, C40/50 = 1.08, C50/60 = 1.10.

³⁾ Max. long term temperature / max. short term temperature after installation.

⁴⁾ Depends on h_{ef} . Values are valid for $h_{ef,stand}$.

If underrun the char. space or edge distance (C_{cr} or S_{cr}) the loads must be reduced. h_{min} , S_{min} and C_{min} must be observed.





ResiFIX technical data in concrete

Fastening in concrete with Epoxyacrylate EYSF (Standard and Express)

Permissible loads F_{per} [kN] in non-cracked concrete C20/25 for single anchor without influence of spacing and edge distance, installation parameters and unit dimensions. Total safety factors as per ETAG 001 included (γ_M und γ_F). See ETA-approval for design and calculations.

Anchor rods RESI AST, VA AST		M8	M10	M12	M16	M20	M24
Drill hole \emptyset	d_0 [mm]	10	12	14	18	24	28
Embedment depth $h_{ef,min} / h_{ef,stand} / h_{ef,max}$	[mm]	60 / 80 / 160	60 / 90 / 200	70 / 110 / 240	80 / 125 / 320	90 / 170 / 400	96 / 210 / 480

Tension load ¹⁾ (24 °C / 40 °C) ²⁾ in non-cracked concrete (dry or wet)

Zinc plated 5.8	N_{per} [kN]	5,1 / 6,8 / 8,6	6,0 / 9,0 / 13,8	8,4 / 13,2 / 20,0	12,8 / 19,9 / 37,1	17,1 / 33,9 / 58,1	18,8 / 50,3 / 83,8
Stainless steel A4	N_{per} [kN]	5,1 / 6,8 / 9,9	6,0 / 9,0 / 15,7	8,4 / 13,2 / 22,5	12,8 / 19,9 / 42,0	17,1 / 33,9 / 65,3	18,8 / 50,3 / 94,3

Shear load ¹⁾ (24 °C / 40 °C) ²⁾

Zinc plated 5.8	V_{per} [kN]	5,1	8,6	12,0	22,3	34,9	45,2 / 50,3 / 50,3
Stainless steel A4	V_{per} [kN]	6,0	9,2	13,7	25,2	39,4	45,2 / 56,8 / 56,8
Bending moment (Zinc plated 5.8)	M_{per} [Nm]	10,9	21,1	37,7	94,9	185,7	320,6
Bending moment (Stainless steel A4)	M_{per} [Nm]	11,9	23,8	42,1	106,7	207,9	359,9

Spacing and edge distance

Spacing	$s_{cr,N}$ [mm]	185	253	304	375	506	581
Edge distance	$c_{cr,N}$ [mm]	92	126	152	188	253	329
Minimum spacing distance	s_{min} [mm]	40	50	60	80	100	120
Minimum edge distance	c_{min} [mm]	40	50	60	80	100	120
Minimum thickness of concrete	h_{min} [mm]	$h_{ef} + 30 \text{ mm} \geq 100 \text{ mm}$				$h_{ef} + 2d_0$	
Installation torque	$T_{inst} \leq$ [Nm]	10	20	40	80	120	160

¹⁾ Increasing factors for non-cracked concrete C30/37 = 1.08, C40/50 = 1.15, C50/60 = 1.19.

²⁾ Max. long term temperature / max. short term temperature after installation. For temperature range 50°C/80°C please see ETA-approval.

³⁾ Depends on h_{ef} . Values are valid for $h_{ef,stand}$.

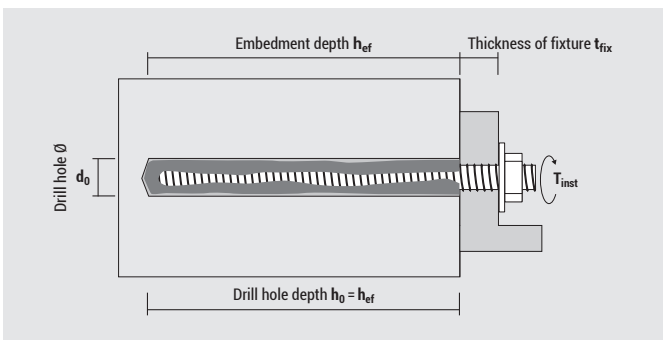
If underrun the char. space or edge distance (C_{cr} or S_{cr}) the loads must be reduced. h_{min} , s_{min} and c_{min} must be observed.

Fastening in concrete with ResiFIX Vinylester VYSF Tropical

Recommended load F_{rec} [kN] in non-cracked concrete C20/25 for single anchor without influence of spacing and edge distance. The safety factors are included.

Anchor rods RESI AST, VA AST		M8	M10	M12	M16	M20
Embedment depth	h_{ef} [mm]	80	90	110	125	170
Edge distance	$c_{cr,N}$ [mm]	92	126	152	188	253
Spacing	$s_{cr,N}$ [mm]	$2 \times c_{cr}$				
Recommended tension load 50 °C / 80 °C ¹⁾	N_{rec} [kN]	6,3	9,9	13,8	19,8	38,2
Recommended shear load for steel 5.8	V_{rec} [kN]	5,1	8,6	12,0	22,3	34,9

¹⁾ Long term temperature / short term temperature. Long term concrete temperature is roughly constant over significant periods of time. Short term elevated temperatures are those that occur over brief intervals, e.g. as a result of day / night cycle.





ResiFIX technical data in concrete

Fastening in concrete with Polyester PYSF

Permissible loads F_{per} in [kN] in non-cracked concrete C20/25 for single anchor without influence of spacing and edge distance, installation parameters and unit dimensions. Total safety factors as per ETAG 001 included (γ_M und γ_F). See ETA-approval for design and calculations.

Anchor rods RESI AST, VA AST		M8	M10	M12	M16
Drill hole \varnothing	d_0 [mm]	10	12	14	18
Embedment depth $h_{ef,min} / h_{ef,stand} / h_{ef,max}$	[mm]	60 / 80 / 160	60 / 90 / 200	70 / 110 / 240	80 / 125 / 320

Tension load ¹⁾ (24 °C / 40 °C) ²⁾ in non-cracked concrete (dry or wet)

Zinc plated 5.8	N_{per} [kN]	5,1 / 6,8 / 8,6	6,0 / 9,0 / 13,8	8,4 / 13,2 / 20,0	12,8 / 19,9 / 37,1
Stainless steel A4	N_{per} [kN]	5,1 / 6,8 / 9,9	6,0 / 9,0 / 15,7	8,4 / 13,2 / 22,5	12,8 / 19,9 / 42,0

Shear load ¹⁾ (24 °C / 40 °C) ²⁾

Zinc plated 5.8	V_{per} [kN]	5,1	8,6	12,0	22,3
Stainless steel A4	V_{per} [kN]	6,0	9,2	13,7	25,2
Bending moment (Zinc plated 5.8)	M_{per} [Nm]	10,9	21,1	37,7	94,9
Bending moment (Stainless steel A4)	M_{per} [Nm]	11,9	23,8	42,1	106,7

Spacing and edge distance

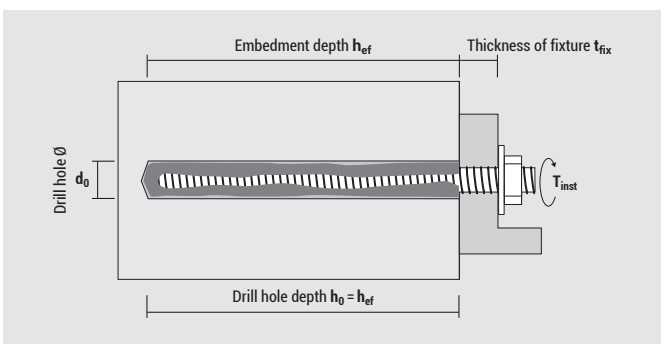
Spacing	$s_{cr,N}$ [mm]	185	253	304	375
Edge distance	$c_{cr,N}$ [mm]	92	126	152	188
Minimum spacing distance	s_{min} [mm]	40	50	60	80
Minimum edge distance	c_{min} [mm]	40	50	60	80
Minimum thickness of concrete	h_{min} [mm]	$h_{ef} + 30 \text{ mm} \geq 100 \text{ mm}$			$h_{ef} + 2d_0$
Installation torque	$T_{inst} \leq$ [Nm]	10	20	40	80

¹⁾ Increasing factors for non-cracked concrete C30/37 = 1.08, C40/50 = 1.15, C50/60 = 1.19.

²⁾ Max. long term temperature / max. short term temperature after installation. For temperature range 50°C/80°C please see ETA-approval.

³⁾ Depends on h_{ef} . Values are valid for $h_{ef, stand}$.

If underrun the char. space or edge distance (C_{cr} or S_{cr}) the loads must be reduced. h_{min} , S_{min} and C_{min} must be observed.





ResiFIX technical data in concrete

Fastening in concrete with the professional system Pure Epoxy BRSF

Permissible loads F_{per} in [kN] in non-cracked (Option 7) concrete C20/25 and cracked (Option 1) concrete C20/25 for single anchor without influence of spacing and edge distance, installation parameters and unit dimensions. Total safety factors as per ETAG 001 included (γ_M und γ_P). Design according to TR029. See ETA-approval for design and calculations.

Anchor rods RESI AST, VA AST		M8	M10	M12	M16	M20	M24	M30
Drill hole \varnothing	d_0 [mm]	10	12	14	18	24	28	35
Embedment depth $h_{ef,min} / h_{ef,stand} / h_{ef,max}$	[mm]	60 / 80 / 96	60 / 90 / 120	70 / 110 / 144	80 / 125 / 192	90 / 170 / 240	96 / 210 / 288	120 / 280 / 360

Tension load ^{1) 2)} (24 °C / 40 °C) ³⁾ non-cracked concrete

Zinc plated 5.8	N_{per} [kN]	8,6 / 8,6 / 8,6	9,3 / 13,8 / 13,8	11,7 / 20,0 / 20,0	14,3 / 28,0 / 37,1	14,7 / 38,1 / 58,1	16,2 / 52,3 / 83,8	22,6 / 80,5 / 117,3
Stainless steel A4	N_{per} [kN]	9,3 / 9,9 / 9,9	9,3 / 15,7 / 15,7	11,7 / 22,5 / 22,5	14,3 / 28,0 / 42,0	14,7 / 38,1 / 63,9	16,2 / 52,3 / 84,0	22,6 / 70,2 / 70,2

Tension load ^{1) 2)} (24 °C / 40 °C) ³⁾ cracked concrete

Zinc plated 5.8	N_{per} [kN]	-	-	7,9 / 12,3 / 16,2	10,2 / 16,2 / 24,9	10,5 / 21,8 / 30,8	11,5 / 29,6 / 40,6	16,1 / 49,4 / 63,5
Stainless steel A4	N_{per} [kN]	-	-	7,9 / 12,3 / 16,2	10,2 / 16,2 / 24,9	10,5 / 21,8 / 30,8	11,5 / 29,6 / 40,6	16,1 / 49,4 / 63,5

Tension load ^{1) 2)} (43 °C / 60 °C) ³⁾ non-cracked concrete

Zinc plated 5.8	N_{per} [kN]	6,8 / 8,6 / 8,6	7,1 / 10,7 / 13,8	9,4 / 14,8 / 19,4	13,6 / 21,2 / 32,6	14,7 / 29,1 / 41,0	16,2 / 40,4 / 55,4	22,6 / 67,3 / 86,6
Stainless steel A4	N_{per} [kN]	6,8 / 9,1 / 9,9	7,1 / 10,7 / 14,2	9,4 / 14,8 / 19,4	13,6 / 21,2 / 32,6	14,7 / 29,1 / 41,0	16,2 / 40,4 / 55,4	22,6 / 67,3 / 70,2

Tension load ^{1) 2)} (43 °C / 60 °C) ³⁾ cracked concrete

Zinc plated 5.8	N_{per} [kN]	-	-	4,7 / 7,4 / 9,7	6,4 / 10,0 / 15,3	6,7 / 12,7 / 18,0	8,6 / 18,8 / 25,9	13,5 / 31,4 / 40,4
Stainless steel A4	N_{per} [kN]	-	-	4,7 / 7,4 / 9,7	6,4 / 10,0 / 15,3	6,7 / 12,7 / 18,0	8,6 / 18,8 / 25,9	13,5 / 31,4 / 40,4

Shear load ¹⁾ non-cracked concrete

Zinc plated 5.8	V_{per} [kN]	5,1	8,6	12,0	22,3	34,9	45,2 / 50,3 / 50,3	63,2 / 80,0 / 80,0
Stainless steel A4	V_{per} [kN]	6,0	9,2	13,7	25,2	39,4	45,2 / 56,8 / 56,8	42,0 / 80,0 / 80,0

Shear load ¹⁾ cracked concrete

Zinc plated 5.8	V_{per} [kN]	5,1	8,6	12,0	22,3	29,3 / 34,9 / 34,9	32,2 / 50,3 / 50,3	45,1 / 80,0 / 80,0
Stainless steel A4	V_{per} [kN]	6,0	9,2	13,7	24,5	29,3 / 39,4 / 39,4	32,2 / 56,8 / 56,8	42,0 / 80,0 / 80,0

Bending moment (Zinc plated 5.8)	M_{per} [Nm]	10,9	21,1	37,1	94,9	185,1	320,0	641,7
Bending moment (Stainless steel A4)	M_{per} [Nm]	11,9	23,8	42,1	106,2	207,9	359,0	337,6

Spacing and edge distance

Spacing ⁴⁾	$S_{cr,N}$ [mm]	226	270	330	375	510	607	759
Edge distance ⁴⁾	$C_{cr,N}$ [mm]	113	135	165	188	255	304	380
Minimum spacing distance	S_{min} [mm]	40	50	60	80	100	120	150
Minimum edge distance	C_{min} [mm]	40	50	60	80	100	120	150
Minimum thickness of concrete	h_{min} [mm]	$h_{ef} + 30 \text{ mm} \geq 100 \text{ mm}$				$h_{ef} + 2d_0$		
Installation torque	$T_{inst} \leq$ [Nm]	10	20	40	80	120	160	200

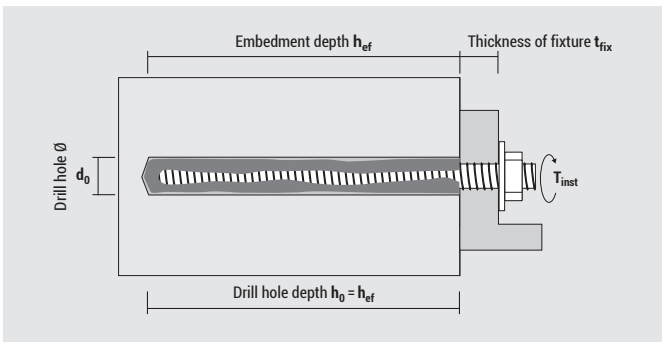
¹⁾ Values are valid for $h_{ef,min} / h_{ef,stand} / h_{ef,max}$.

²⁾ Increasing factors for cracked and non-cracked concrete C30/37 = 1.04, C40/50 = 1.08, C50/60 = 1.10.

³⁾ Max. long term temperature / max. short term temperature after installation.

⁴⁾ Depends on h_{ef} . Values are valid for $h_{ef,stand}$.

If underrun the char. space or edge distance (C_{cr} or S_{cr}) the loads must be reduced. h_{min} , S_{min} and C_{min} must be observed.



Chemical fastening systems








ResiFIX technical data in masonry

Fastening in masonry with Vinylester VYSF (Standard and Cool)

Permissible loads in [kN] and installation parameters - selection; for additional brick types and application conditions see ETA-approval.

Fastenings in solid and hollow masonry

Suitable building materials	Density ρ [kg/dm ³]	Compressive strength f_b [N/mm ²]	Anchor rods RESI AST, VA AST Size	Sleeve Size	Min. embedment dept h_{ef} [mm]	Use category dry / dry 24°C/40°C ¹⁾	
						Tension load N_{per} [kN]	Shear V_{per} [kN]
Solid sand-lime brick KSV 	≥ 2,0	≥ 20	M8	without / SH 12-80	80 / 80	1,71 / 1,57	1,14 / 1,14
			M10	without / SH 16-85	90 / 85	1,71 / 1,43	1,29 / 1,14
			M12	without / SH 20-85	100 / 85	1,71 / 1,14	1,14 / 1,14
			M16	without / SH 20-85	100 / 85	1,43 / 1,14	1,14 / 1,14
Solid brick Mz 	≥ 1,6	≥ 20	M8	without / SH 12-80	80 / 80	1,29 / 1,29	1,43 / 1,43
			M10	without / SH 16-85	90 / 85	1,57 / 1,43	1,43 / 1,43
			M12	without / SH 20-85	100 / 85	1,71 / 1,43	1,43 / 1,43
Aerated concrete AAC6 	≥ 0,6	≥ 6	M8	without	80	0,71	1,71
			M10	without	90	1,14	2,86
			M12	without	100	1,43	2,86
			M16	without	100	1,86	2,86
Hollow sand-lime brick KSL (KSL 3DF) 	≥ 1,4	≥ 12	M8	SH 12-80	80	0,57	0,86
			M10	SH 16-85	85	0,57	1,29
			M10	SH 16-130	130	0,86	1,29
			M12	SH 20-85	85	1,71	1,29
Hollow brick HLz (HLz 16DF) 	≥ 0,8	≥ 12	M8	SH 12-80	80	1,00	1,14
			M10	SH 16-85	85	1,00	1,86
			M10	SH 16-130	130	1,43	1,86
			M12	SH 20-85	85	1,00	2,00
			M16	SH 20-85	85	1,00	2,00

N_{per} , V_{per} : Permissible loads incl. safety factors (γ_M and $\gamma_F = 1,4$), without influence of spacing and edge distance.

Drilling method: KSV and MZL hammer drilling; aerated concrete, KSL and HLz: rotary drilling

¹⁾ Max. long-term temperature / max. short-term temperature after installation.

Spacing and edge distances

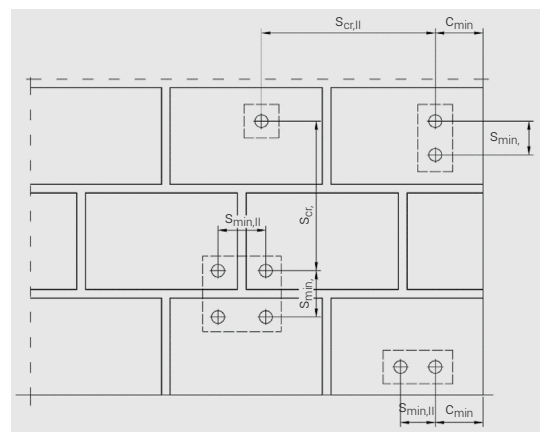
Suitable building materials	Anchor rod	Sleeve	Char. edge distance c_{cr} [mm]	Min. edge distance c_{min} [mm]	Char. spacing parallel to the bearing joint $s_{cr, }$ [mm]	Char. spacing perpendicular to the bearing joint s_{cr} [mm]	Min. spacing s_{min} [mm]
Solid sand-lime brick KSV	M8	without	120	60	240	240	120
	M10	without	135	60	270	270	120
	M12	without	150	60	300	300	120
	M16	without	150	60	300	300	120
Solid brick Mz	M8	without	120	60	240	240	120
	M10	without	135	60	270	270	120
	M12	without	150	60	300	300	120
Aerated concrete AAC6	M8	without	120	75*	240	240	100
	M10	without	135	75*	270	270	100
	M12	without	150	75*	300	300	100
Hollow sand-lime brick KSL (KSL 3DF)	M8	SH 12-80	120	60	240	240	120
	M10	SH 16-85	120	60	240	240	120
	M10	SH 16-130	120	60	240	240	120
Hollow brick HLz (HLz 16DF)	M8	SH 12-80	120	120	497	238	100
	M10	SH 16-85	120	120	497	238	100
	M10	SH 16-130	120	120	497	238	100
	M12,M16	SH 20-85	120	120	497	238	100

* valid for tension load; for shear load parallel to the free edge: 75 mm, for shear load perpendicular to the free edge $1,5 \times h_{ef}$

Group factor for anchor group in case of tension load, shear load parallel respectively perpendicular to the free edge: see ETA-approval

Bending moment

Steel			Anchor size			
			M8	M10	M12	M16
Zinc plated 5.8	M_{zul}	[Nm]	10,8	21,2	37,7	94,8
Stainless steel A4	M_{zul}	[Nm]	11,9	23,8	42,1	106,7










ResiFIX technical data in masonry

Fastening in masonry with Epoxyacrylate EYSF (Standard and Express)

Permissible loads in [kN] and installation parameters - selection; for additional brick types and application conditions see ETA-approval.

Fastenings in solid and hollow masonry

Suitable building materials	Density ρ [kg/dm ³]	Com- pressive strength f_b [N/mm ²]	Anchor rods RESI AST, VA AST Size	Sleeve Size	Min. embedment dept h_{ef} [mm]	Use category dry / dry 24°C/40°C ¹⁾	
						Tension load N_{per} [kN]	Shear V_{per} [kN]
Solid sand-lime brick KSV 	$\geq 2,0$	≥ 20	M8	without / SH 12-80	80 / 80	1,29 / 1,14	1,29 / 1,14
			M10	without / SH 16-85	90 / 85	1,29 / 1,14	1,29 / 1,29
			M12	without / SH 20-85	100 / 85	1,60 / 1,14	1,43 / 1,43
			M16	without / SH 20-85	100 / 85	1,29 / 1,14	1,43 / 1,43
Solid brick Mz 	$\geq 1,64$	≥ 20	M8	without / SH 12-80	80 / 80	0,71 / 0,86	1,29 / 1,14
			M10	without / SH 16-85	90 / 85	0,71 / 0,86	1,57 / 1,43
			M12	without / SH 20-85	100 / 85	0,57 / 0,86	2,14 / 1,43
Aerated concrete AAC4 	$\geq 0,50$	≥ 4	M8	without	80	0,32	0,54
			M10	without	90	0,90	0,71
			M12	without	100	0,90	0,90
			M16	without	100	1,25	1,25
Hollow sand-lime brick KSL (KSL 3DF) 	$\geq 1,4$	≥ 12	M8	SH 12-80	80	0,57	0,71
			M10	SH 16-85	85	0,57	1,00
			M10	SH 16-130	130	1,00	1,29
			M12	SH 20-85	85	0,57	1,00
Hollow brick HLz (HLz 16DF) 	$\geq 0,83$	≥ 12	M8	SH 12-80	80	0,43	1,00
			M10	SH 16-85	85	0,71	1,71
			M10	SH 16-130	130	1,00	2,30
			M12	SH 20-85	85	1,00	1,71
			M16	SH 20-85	85	1,00	1,71

N_{per} , V_{per} : Permissible loads incl. safety factors (γ_M and $\gamma_F = 1,4$), without influence of spacing and edge distance.

Drilling method: KSV and MZL hammer drilling; aerated concrete, KSL and HLz: rotary drilling

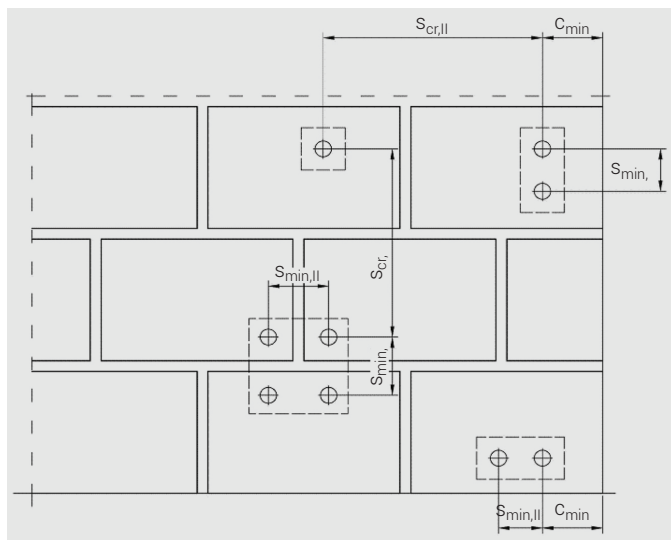
¹⁾Max. long-term temperature / max. short-term temperature after installation.

Spacing and edge distances

Suitable building materials	Anchor rod	Sleeve	Min. edge distance	Min. spacing parallel to the bearing joint	Min. spacing perpendicular to the bearing joint
			$C_{cr} = C_{min}$ [mm]	$S_{min,II} = S_{cr,II}$ [mm]	$S_{min, I} = S_{cr, I}$ [mm]
Solid sand-lime brick KSV	M8	without	120	240	240
	M10	without	135	270	240
	M12	without	150	300	300
	M16	without	150	300	300
Solid brick Mz	M8	without	120	240	240
	M10	without	135	270	270
	M12	without	150	300	300
Aerated concrete AAC6	M8	SH 12-80	120	240	240
	M10	SH 16-85	135	270	270
	M10	SH 16-130	150	300	300
Hollow sand-lime brick KSL (KSL 3DF)	M8	SH 12-80	100	240	113
	M10	SH 16-85	100	240	113
	M10	SH 16-130	100	240	113
Hollow brick HLz (HLz 16DF)	M8	SH 12-80	100	497	238
	M10	SH 16-85	100	497	238
	M10	SH 16-130	100	497	238
	M12,M16	SH 20-85	120	497	238

Bending moment

Steel			Anchor size			
			M8	M10	M12	M16
Zinc plated 5.8	M_{per}	[Nm]	10,8	21,2	37,7	94,8
Stainless steel A4	M_{per}	[Nm]	11,9	23,8	42,1	106,7










ResiFIX technical data in masonry

Fastening in masonry with Polyester PYSF

Permissible loads in [kN] and installation parameters - selection; for additional brick types and application conditions see ETA-approval.

Fastenings in solid and hollow masonry

Suitable building materials	Density ρ [kg/dm ³]	Compressive strength f_b [N/mm ²]	Anchor rods RESI AST, VA AST Size	Sleeve Size	Min. embedment dept h_{ef} [mm]	Use category dry / dry 24°C/40°C ¹⁾	
						Tension load N_{per} [kN]	Shear V_{per} [kN]
Solid sand-lime brick KSV 	≥ 2,0	≥ 20	M8	without / SH 12-80	80 / 80	1,29 / 1,14	1,29 / 1,14
			M10	without / SH 16-85	90 / 85	1,29 / 1,14	1,29 / 1,29
			M12	without / SH 20-85	100 / 85	1,60 / 1,14	1,43 / 1,43
			M16	without / SH 20-85	100 / 85	1,29 / 1,14	1,43 / 1,43
Solid brick Mz 	≥ 1,64	≥ 20	M8	without / SH 12-80	80 / 80	0,71 / 0,86	1,29 / 1,14
			M10	without / SH 16-85	90 / 85	0,71 / 0,86	1,57 / 1,43
			M12	without / SH 20-85	100 / 85	0,57 / 0,86	2,14 / 1,43
Aerated concrete AAC4 	≥ 0,50	≥ 4	M8	without	80	0,32	0,54
			M10	without	90	0,90	0,71
			M12	without	100	0,90	0,90
			M16	without	100	1,25	1,25
Hollow sand-lime brick KSL (KSL 3DF) 	≥ 1,4	≥ 12	M8	SH 12-80	80	0,57	0,71
			M10	SH 16-85	85	0,57	1,00
			M10	SH 16-130	130	1,00	1,29
			M12	SH 20-85	85	0,57	1,00
Hollow brick HLz (HLz 16DF) 	≥ 0,83	≥ 12	M8	SH 12-80	80	0,43	1,00
			M10	SH 16-85	85	0,71	1,71
			M10	SH 16-130	130	1,00	2,30
			M12	SH 20-85	85	1,00	1,71
			M16	SH 20-85	85	1,00	1,71

N_{per} , V_{per} : Permissible loads incl. safety factors (γ_M and $\gamma_F = 1,4$), without influence of spacing and edge distance.

Drilling method: KSV and MZL hammer drilling; aerated concrete, KSL and HLz: rotary drilling

¹⁾ Max. long-term temperature / max. short-term temperature after installation.

Spacing and edge distances

Suitable building materials	Anchor rod	Sleeve	Min. edge distance	Min. spacing parallel to the bearing joint	Min. spacing perpendicular to the bearing joint
			$C_{cr} = C_{min}$ [mm]	$S_{min,II} = S_{cr,II}$ [mm]	$S_{min, I} = S_{cr, I}$ [mm]
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Hollow sand-lime brick KSL (KSL 3DF)	M8	SH 12-80	100	240	113
	M10	SH 16-85	100	240	113
	M10	SH 16-130	100	240	113
	M12,M16	SH 20-85	120	240	113
Hollow brick HLz (HLz 16DF)	M8	SH 12-80	100	497	238
	M10	SH 16-85	100	497	238
	M10	SH 16-130	100	497	238
	M12,M16	SH 20-85	120	497	238

Bending moment

Steel		Anchor size	Anchor size			
			M8	M10	M12	M16
Zinc plated 5.8	M_{per}	[Nm]	10,8	21,2	37,7	94,8
Stainless steel A4	M_{per}	[Nm]	11,9	23,8	42,1	106,7

