Fastening injection system ResiFIX VYSF

Approvals and certificates

European Technical Assessment Option 1 for cracked concrete (M8 – M30, Ø8 – Ø32)

European Technical Assessment for masonry (M8 - M16)

European Technical Assessment for post-installed rebar connections (Ø8 – Ø32)

MADE IN GERMANY

Approved for anchor rods and reinforced steel bars
- **Various applications**

Class A+: Lowest emissions of critical substances in closed spaces
- **Harmless to health after curing**

Sustainability certification LEED
- **Environmentally friendly, low-pollutant, low-emission and sustainable construction product**

Usage under seismic conditions
- **Tested for use in areas with high risk of earthquakes**

Option 1 (M8 – M30, Ø8 – Ø32)

European Technical Assessment Option 1 for cracked and non-cracked concrete (M8 - M30)
- **For a wide range of safety critical applications**

Apart from the 410 ml cartridge, two mixing nozzles are included
- **You can continue working immediately after an interruption**

1350 kg M10-90mm C20/25

Very high load values
- **Heavy-duty usage**

Waterfilled drill holes

Usage also in water-filled drill holes and suitable for contact with drinking water
- **Extended range of applications**

R 120

Fire resistance test R120
- **Fulfills fire protection requirements**

Masonry (M8 - M16)

European Technical Assessment for masonry (M8 - M16)
- **For more application flexibility**

STYRENE FREE

Styrene free
- **Reduced odour exposure**

Fastening injection system ResiFIX VYSF


VY 300 SF


VY 345 SF


VY 410 SF

Vinylester VYSF (styrene free)

Type	Art-No	Content [ml]	Mixings nozzles included [pcs]	Shelf life [months]	ETA	€ / 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

Vinylester VYSF Cool (styrene free)

for -20°C to +10°C

Type	Art-No	Content [ml]	Mixings nozzles included [pcs]	Shelf life [months]	ETA	€ / pc	[pcs]
VY 300 SF Cool	300VCSF	300	2	12	●		12

Seasonal article


30 x 40 x 23 cm

Universal box with ResiFIX VY 300 SF, VY 345 SF

Type	Art-No	Content [cartridges]	Mixings nozzles included [pcs]	Shelf life [months]	ETA	€ / 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 ResiFIX Vinylester VYSF

Temperature of building material	[°C]	> -10 [1]	> -5	> 0	> +5	> +10	> +20	> +30	> +40
Max. 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 temperature min. 15 °C

[2] Double curing time in wet concrete

Curing times ResiFIX Vinylester VYSF Cool

Temperature of building material	[°C]	> -20 ❄	> -15 ❄	> -10	> -5	> 0	> +5	+10
Max. 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

Fastening injection system ResiFIX VYSF

Fastening in concrete (Standard and Cool)

Permissible loads F_{per} in [kN] in non-cracked concrete C20/25 (option 7) and cracked concrete C20/25 (option 1) without influence of edge distances and spacing as well as installation parameters and unit dimensions. The permissible loads F_{per} include the partial safety factors for the resistance from the ETA and a partial safety factor for the actions of γF = 1.4. Design method according TR 055. The ETA assessment must be observed in the design.

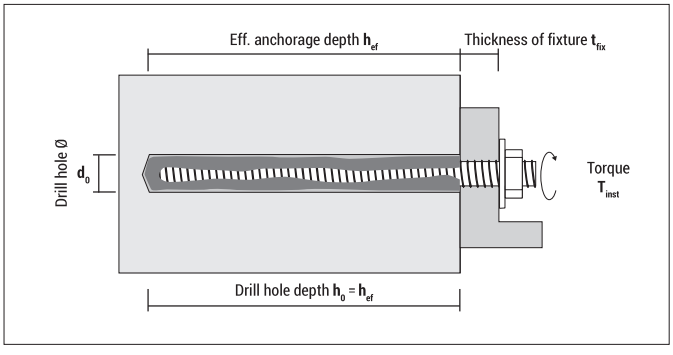
Anchor studs RESI AST, VA AST			M8	M10	M12	M16	M20	M24	M 27	M30
Drill hole Ø	d_0	[mm]	10	12	14	18	24	28	30	35
Anchorage depth	$h_{ef,min}$ / $h_{ef,stand}$ / $h_{ef,max}$	[mm]	60 / 80 / 160	60 / 90 / 200	70 / 110 / 240	80 / 125 / 320	90 / 170 / 400	96 / 210 / 480	108 / 240 / 540	120 / 280 / 600
Permissible tension load [1] [2] (24 °C / 40 °C) [3] in non-cracked concrete (dry or wet)										
Zinc plated 5.8	N_{per}	[kN]	7,2 / 8,7 / 8,7	9,0 / 13,5 / 13,8	11,7 / 19,7 / 20,0	14,3 / 28,0 / 37,3	17,1 / 44,4 / 58,3	18,8 / 61,0 / 83,9	23,1 / 74,5 / 109,4	26,3 / 93,9 / 133,5
Stainless steel A4	N_{per}	[kN]	7,2 / 9,6 / 9,8	9,0 / 13,5 / 15,5	11,7 / 19,7 / 22,5	14,3 / 28,0 / 41,9	17,1 / 44,4 / 65,5	18,8 / 61,0 / 94,3	23,1 / 57,3 / 57,4	26,3 / 70,0 / 70,0
Permissible tension load [1] [2] (24 °C / 40 °C) [3] in 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	12,2 / 23,3 / 54,9	13,4 / 34,6 / 79,0	16,5 / 52,5 / 109,4	18,8 / 66,9 / 133,5
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	12,2 / 23,3 / 54,9	13,4 / 34,6 / 79,0	16,5 / 52,5 / 57,4	18,8 / 66,9 / 70,0
Permissible tension load [1] [2] (50 °C / 80 °C) [3] in non-cracked concrete (dry or wet)										
Zinc plated 5.8	N_{per}	[kN]	5,4 / 7,2 / 8,7	6,7 / 10,1 / 13,8	9,4 / 14,8 / 20,0	14,3 / 22,4 / 37,3	17,1 / 38,1 / 58,3	18,8 / 53,4 / 83,9	23,1 / 60,6 / 109,4	26,3 / 68,1 / 133,5
Stainless steel A4	N_{per}	[kN]	5,4 / 7,2 / 9,8	6,7 / 10,1 / 15,5	9,4 / 14,8 / 22,5	14,3 / 22,4 / 41,9	17,1 / 38,1 / 65,5	18,8 / 53,4 / 94,3	23,1 / 57,4 / 57,4	26,3 / 68,1 / 70,0
Permissible tension load [1] [2] (50 °C / 80 °C) [3] in 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	16,5 / 36,4 / 78,8	18,8 / 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	16,5 / 36,4 / 57,4	18,8 / 47,1 / 70,0
Permissible shear load [1] in non-cracked concrete										
Zinc plated 5.8	V_{per}	[kN]	5,2	8,3	12,0	22,4	35,0	45,2 / 50,4 / 50,4	55,5 / 65,6 / 65,6	63,2 / 80,1 / 80,1
Stainless steel A4	V_{per}	[kN]	5,9	9,3	13,5	25,1	39,2	45,2 / 56,5 / 56,5	34,5 / 34,5 / 34,5	42,1 / 42,1 / 42,1
Permissible shear load [1] in cracked concrete										
Zinc plated 5.8	V_{per}	[kN]	5,2 / 5,2 / 5,2	8,3	12,0	21,1 / 22,4 / 22,4	29,3 / 35,0 / 35,0	32,2 / 50,4 / 50,4	39,6 / 65,6 / 65,6	45,1 / 80,1 / 80,1
Stainless steel A4	V_{per}	[kN]	5,7 / 5,9 / 5,9	9,0 / 9,3 / 9,3	13,5	21,1 / 25,1 /25,1	29,3 / 39,2 / 39,2	32,2 / 56,5 / 56,5	34,5 / 34,5 / 34,5	42,1 / 42,1 / 42,1
Permissible bending moment (Zinc plated 5.8)	M_{per}	[Nm]	10,7	21,4	37,4	94,9	185,2	320,0	476,2	642,1
Permissible bending moment (Stainless steel A4)	M_{per}	[Nm]	12,0	24,0	41,9	106,4	207,8	359,0	250,1	337,2
Spacing and edge distance										
Spacing	$s_{cr,N}$	[mm]	180 / 240 / 480	180 / 270 / 600	210 / 330 / 720	240 / 375 / 960	270 / 510 / 1200	288 / 630 / 1440	324 / 720 / 1620	360 / 840 / 1800
Edge distance	$c_{cr,N}$	[mm]	90 / 120 / 240	90 / 135 / 300	105 / 165 / 360	120 / 188 / 480	135 / 255 / 600	144 / 315 / 720	162 / 360 / 810	180 / 420 / 900
Minimum spacing	s_{min}	[mm]	40	50	60	80	100	120	135	150
Minimum edge distance	c_{min}	[mm]	40	50	60	80	100	120	135	150
Min. thickness of structural part	h_{min}	[mm]	h_{ef} + 30 mm ≥ 100 mm			h_{ef} + 2d_0				
Max. installation torque	T_{inst} ≤	[Nm]	10	20	40	80	120	160	180	200

[1] Values are valid for $h_{ef,min}$ / $h_{ef,stand}$ / $h_{ef,max}$

[2] For higher concrete strengths up to C50/60 the values increase by max. 10%.

[3] Max. long term temperature / max. short term temperature after installation. For temperature range 72°C/120°C please see ETA assessment

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



Fastening injection system ResiFIX VYSF

Fastening in masonry (Solid and hollow brick) Standard and Cool

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

Suitable building materials		Density ρ [kg/dm³]	Compressive strength f_b [N/mm²]	Anchor studs RESI AST, VA AST Size	Sleeve Size	Min. Anchorage depth h_{ef} [mm]	Use category dry / dry 24°C/40°C [1] Tension load N_{per} [kN]	Use category dry / dry 24°C/40°C [1] Shear load V_{per} [kN]
Solid sand-lime brick KS (NF)		≥ 2,0	≥ 28	M8	without / SH 12-80	80 / 80	2,00 / 2,00	2,00 / 2,00
				M10	without / SH 16-85	90 / 85	2,00 / 2,00	2,00 / 2,00
				M12	without / SH 20-85	100 / 85	2,00 / 2,00	2,00 / 2,00
				M16	without / SH 20-85	100 / 85	2,00 / 2,00	2,00 / 2,00
Solid brick Mz (DF)		≥ 2,0	≥ 20	M8	without / SH 12-80	80 / 80	2,00 / 2,00	2,29 / 2,29
				M10	without / SH 16-85	90 / 85	2,00 / 2,00	2,29 / 2,29
				M12	without / SH 20-85	100 / 85	2,00 / 2,00	2,29 / 2,29
				M16	without / SH 20-85	100 / 85	2,29 / 2,29	3,43 / 3,43
Aerated concrete AAC2		≥ 0,35	≥ 2	M8	without	80	0,43 / 1,07	0,54 / 1,61
Aerated concrete AAC4		≥ 0,50	≥ 4	M10	without	90	0,43 / 1,07	0,89 / 2,68
				M12	without	100	0,71 / 1,79	0,71 / 2,68
				M16	without	100	0,71 / 1,79	0,71 / 2,68
Hollow sand-lime brick KSL (KSL 3DF)		≥ 1,4	≥ 12	M8	SH 16-85	85	0,64	1,53
				M10	SH 16-85	85	0,64	1,53
				M10	SH 16-130	130	0,64	1,53
				M12	SH 20-85	85	1,65	1,53
				M16	SH 20-85	85	1,65	1,53
Hollow brick HLz (10DF)		≥ 1,25	≥ 12	M8	SH 12-80	80	0,55	1,77
				M10	SH 16-85	85	0,55	1,77
				M10	SH 16-130	130	0,55	1,77
				M12	SH 20-85	85	1,11	1,77
				M16	SH 20-85	85	1,11	2,55

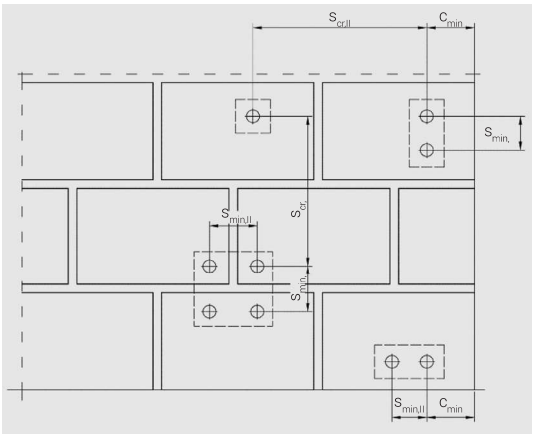
N_{per}, V_{per}: Permissible loads incl. safety factors (γ_M and γ_F = 1,4), without influence of spacing and edge distance.
Drilling method: KS and Mz: hammer drilling; Aerated concrete, KSL and HLz: rotary drilling
[1] Max. long-term temperature / max. short-term temperature after installation.

Spacing and edge distance

Suitable building materials	Anchor stud	Sleeve	Char. Edge distance c_{cr} [mm]	Min. Edge distance c_{min} [mm]	Char. Spacing parallel to the bearing joint $s_{cr,II}$ [mm]	Char. Spacing perpendicular to the bearing joint $s_{cr,\perp}$ [mm]	Min. Spacing s_{min} [mm]	Max. Torque T_{inst} [Nm]
Solid sand-lime brick KS (NF)	M8	without	150	60	240	150	75	10
	M10	without	150	60	240	150	75	10
	M12	without	150	60	240	150	75	15
	M16	without	150	60	240	150	75	15
Solid brick Mz (DF)	M8	without	150	60	240	130	65	10
	M10	without	150	60	240	130	65	10
	M12	without	150	60	240	130	65	10
	M16	without	150	60	240	130	65	10
Aerated concrete AAC6	M8	without	150	50*	300	250	50	5
	M10	without	150	50*	300	250	50	5
	M12	without	150	50*	300	250	50	10
	M16	without	150	50*	300	250	50	16
Hollow sand-lime brick KSL (KSL 3DF)	M8	SH 12-80	120	60	240	120	120	5
	M10	SH 16-85	120	60	240	120	120	5
	M10	SH 16-130	120	60	240	120	120	5
	M12,M16	SH 20-85	120	60	240	120	120	8
Hollow brick HLz (10DF)	M8	SH 12-80	120	50	300	250	50	5
	M10	SH 16-85	120	50	300	250	50	10
	M10	SH 16-130	120	50	300	250	50	10
	M12,M16	SH 20-85	120	50	300	250	50	10

Permissible bending moment

Steel		Anchor stud M8	M10	M12	M16
Zinc plated 5.8	M_{per} [Nm]	10,9	21,1	37,7	94,4
Stainless steel A4	M_{per} [Nm]	11,9	23,8	42,1	106,7



* Values are valid for pull-out load; for shear load parallel to the free edge: 75 mm, for shear load perpendicular to the free edge: 1,5 x h_{ef}
Group factors for anchor groups under tension, shear load parallel or perpendicular to the free edge: please see ETA assessment