Highest permissible loads in concrete C20/25

Approved loads for single anchor without influence of spacing and edge distance.
Total safety factor as per ETAG 001 included (γ_M and γ_F).

Loads and performance data	Expander EST1			M8		M10		M12		M16		M20	M24
Standard anchorage depth		h_{ef}	[mm]	**46**	**-**	**60**	**-**	**70**	**-**	**85**	**-**	**100**	**115**
Reduced anchorage depth		$h_{ef, red}$	[mm]	**-**	**35**	**-**	**40**	**-**	**50**	**-**	**65**	**-**	**-**
							cracked concrete						
Mean ultimate loads, tension	C25/30	N_{um}	[kN]	10,5		14,9		28,1		35,5		54,3	79,8
Mean ultimate loads, shear	C25/30	V_{um}	[kN]	16,4		24,2		38,4		65,1		89,0	131,8
Approved loads, tension	C20/25	appr. N	[kN]	2,4	2,4	4,3	3,6	7,6	6,1	11,9	9,0	17,1	21,1
	C25/30	appr. N	[kN]	2,6	2,6	4,7	3,9	8,3	6,6	13,0	9,8	18,8	23,2
	C30/37	appr. N	[kN]	2,9	2,9	5,2	4,3	9,3	7,4	14,5	10,9	20,9	25,7
	C40/50	appr. N	[kN]	3,4	3,4	6,1	5,1	10,8	8,6	16,8	12,7	24,2	29,9
	C50/60	appr. N	[kN]	3,7	3,7	6,6	5,5	11,8	9,4	18,4	13,9	26,6	32,8
							non-cracked concrete						
Approved loads, tension	C20/25	appr. N	[kN]	5,7	3,6	7,6	4,3	11,9	8,5	16,7	12,6	24,0	29,7
	C25/30	appr. N	[kN]	6,3	3,9	8,3	4,7	13,0	9,3	18,3	13,8	26,3	32,5
	C30/37	appr. N	[kN]	7,0	4,3	9,3	5,2	14,5	10,3	20,3	15,3	29,3	36,1
	C40/50	appr. N	[kN]	7,5	5,1	10,8	6,1	16,8	12,0	23,6	17,8	34,0	41,9
	C50/60	appr. N	[kN]	7,5	5,5	11,8	6,6	18,4	13,2	25,8	19,5	37,3	45,9
							cracked / non-cracked concrete						
Approved loads, shear	C20/25	appr. V	[kN]	7,0	7,0	11,5	10,4/11,5	17,1	14,5/17,1	31,4	21,6/30,2	37,1	59,2/65,1
	≥ C25/30	appr. V	[kN]	7,0	7,0	11,5	11,4/11,5	17,1	15,9/17,1	31,4	23,6/31,4	37,1	64,8/65,1
Approved bending moments		appr. M	[Nm]	13,1	13,1	26,9	26,9	46,9	46,9	123,4	123,4	195,0	513,1
Spacing and edge distance													
Effective anchorage depth		h_{ef}	[mm]	46	35	60	40	70	50	85	65	100	115
Characteristic spacing		$s_{cr, N}$	[mm]	138	105	180	120	210	150	255	195	300	345
Characteristic edge distance		$c_{cr, N}$	[mm]	69	52,5	90	60	105	75	127,5	97,5	150	172,5
Minimum spacing and edge distance for standard thickness of concrete member													
							cracked concrete						
Standard thickness of concrete slab		$h_{min,1}$	[mm]	100	-	120	-	140	-	170	-	200	230
Minimum spacing / for edge distance c		s_{min} / c	[mm]	40/70	-	45/70	-	60/100	-	60/100	-	95/150	100/180
Minimum edge distance / for spacing s		c_{min} / s	[mm]	40/80	-	45/90	-	60/140	-	60/180	-	95/200	100/220
							non-cracked concrete						
Minimum spacing / for edge distance c		s_{min} / c	[mm]	40/80	-	45/70	-	60/120	-	65/120	-	90/180	100/180
Minimum edge distance / for spacing s		c_{min} / s	[mm]	50/100	-	50/100	-	75/150	-	80/150	-	130/240	100/220
Minimum spacing and edge distance for minimum thickness of concrete member													
							cracked concrete						
Minimum thickness of concrete slab		h_{min2} / h_{min3}	[mm]	80	80	100	80	120	100	140	140	-	-
Minimum spacing / for edge distanc e c		s_{min} / c	[mm]	40/70	50/60	45/90	50/100	60/100	50/160	70/160	65/170	-	-
Minimum edge distance / for spacing s		c_{min} / s	[mm]	40/80	40/185	50/115	65/180	60/140	65/250	80/180	100/250	-	-
							non-cracked concrete						
Minimum spacing / for edge distance c		s_{min} / c	[mm]	40/80	50/60	60/140	50/100	60/120	50/160	80/180	65/170	-	-
Minimum edge distance / for spacing s		c_{min} / s	[mm]	50/100	40/185	90/140	65/180	75/150	100/185	90/200	170/65	-	-
Installation parameters													
Drill hole diameter		d_o	[mm]	8	8	10	10	12	12	16	16	20	24
Diameter of clearance hole in the fixture		d_f	[mm]	9	9	12	12	14	14	18	18	22	26
Depth of drill hole		h_1	[mm]	60	49	75	55	90	70	110	90	125	145
Installation torque		T_{inst}	[Nm]	20	20	25	25	45	45	90	90	160	200
Width across nut		SW	[mm]	13	13	17	17	19	19	24	24	30	36