



Extract from Permissible Service Conditions of European Technical Assessment ETA-04/0092

Approved loads (static or quasi-static) for single anchor without influence of spacing and edge distance for temperature range -40°C to +80°C⁴⁾ (Approved loads for temperature range -40°C to +120°C see ETA-04/0092). Total safety factor as per ETAG 001 included (γ_M and γ_F). Load capacities under fire exposure see page 168.

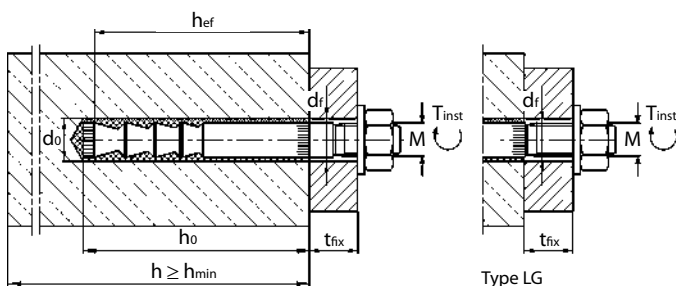
Loads and performance data Injection System VMZ Stainless steel A4 / HCR M16-M24

			90 M16	105 M16	125 M16	145 M16	160 M16	115 M20	170 M20 LG	190 M20 LG	170 M24 LG	200 M 24 LG	225 M24 LG
cracked concrete													
Mean ultimate loads, tension	C25/30	N _{um} [kN]	49,0	74,8	108,7	108,7	114,7	103,3	149,6	149,6	146,2	200,9	200,9
Mean ultimate loads, shear	C25/30	V _{um} [kN]	75,4	75,4	75,4	75,4	75,4	102,9	158,2(102,9 ³⁾)	158,2(102,9 ³⁾)	188,4(147,8 ³⁾)	188,4(147,8 ³⁾)	188,4(147,8 ³⁾)
Approved loads, tension	C20/25 appr. N	[kN]	14,6	18,4	24,0	29,9	34,7	21,1	38,0	44,9	38,0	48,5	57,9
	C25/30 appr. N	[kN]	16,0	20,2	26,2	32,8	38,0	23,2	41,6	49,2	41,6	53,1	63,4
	C30/37 appr. N	[kN]	17,8	22,4	29,1	36,4	42,2	25,7	46,2	54,6	46,2	59,0	70,4
	C40/50 appr. N	[kN]	20,7	26,1	33,9	42,3	46,2	29,9	53,7	63,5	53,7	68,6	81,8
	C50/60 appr. N	[kN]	22,7	28,6	37,1	46,4	46,2	32,8	58,9	69,6	58,9	75,1	89,6
non-cracked concrete													
Approved loads, tension	C20/25 appr. N	[kN]	20,5	25,8	33,5	35,7	42,9	29,6	53,2	62,9	53,2	67,9	81,0
	C25/30 appr. N	[kN]	22,4	28,3	36,7	39,1	46,2	32,4	58,3	68,9	58,3	74,7	88,7
	C30/37 appr. N	[kN]	24,9	31,4	40,8	43,4	46,2	36,0	64,7	76,5	64,7	82,6	92,4
	C40/50 appr. N	[kN]	29,0	36,5	47,4	50,5	46,2	41,9	75,2	78,6	75,2	92,4	92,4
	C50/60 appr. N	[kN]	31,7	40,0	52,0	52,9	46,2	45,9	78,6	78,6	82,4	92,4	92,4
cracked and non-cracked concrete													
Approved loads, shear	≥ C20/25 appr. V	[kN]	29,3	36,0	36,0	36,0	36,0	42,3	74,9	74,9	76,0	89,1	89,1
Approved loads, shear Type LG	≥ C20/25 appr. V	[kN]	29,3	36,0	36,0	36,0	36,0	42,3	49,1	49,1	70,3	70,3	70,3
Approved bending moments	appr. M	[Nm]	152,0	152,0	152,0	152,0	152,0	231,6	259,4	259,4	448,0	448,0	448,0
Spacing and edge distance													
Effective anchorage depth	h _{ef}	[mm]	90	105	125	145	160	115	170	190	170	200	225
Characteristic spacing	s _{cr,N}	[mm]	270	315	375	435	480	345	510	570	510	600	675
Characteristic edge distance	c _{cr,N}	[mm]	135	157,5	187,5	217,5	240	172,5	255	285	255	300	337,5
cracked concrete													
Minimum thickness of concrete slab	h _{min}	[mm]	130	150	170	190	205	160	230	250	230	270	300
Minimum spacing	s _{min}	[mm]	50	50	60	60	60	80	80	80	80	80	80
Minimum edge distance	c _{min}	[mm]	50	50	60	60	60	80	80	80	80	80	80
non-cracked concrete													
Minimum thickness of concrete slab	h _{min}	[mm]	130	150	170	190	205	160	230	250	230	270	300
Minimum spacing	s _{min}	[mm]	50	60	60	60	60	80	80	80	80	105	105
Minimum edge distance	c _{min}	[mm]	50	60	60	60	60	80	80	80	80	105	105
Installation parameters													
Drill hole diameter	d _o	[mm]	18	18	18	18	18	22	24	24	26	26	26
Diameter of clearance hole in the fixture Pre-installation	d _f	[mm]	18	18	18	18	18	22	24 (22 ³⁾)	24 (22 ³⁾)	26	26	26
Diameter of clearance hole in the fixture Through fastening ¹⁾	d _f	[mm]	20	20	20	20	20	24	26	26	28	28	28
Depth of drill hole	h _o	[mm]	98	113	133	153	168	120	180	200	185	215	240
Installation torque	T _{inst ≤}	[Nm]	50	50	50	50	50	80	80	80	100	120	120
Width across nut	SW	[mm]	24	24	24	24	24	30	30	30	36	36	36
Amount of adhesive per drill hole ²⁾		[ml]	11,1	12,6	14,5	15,8	17,4	20,8	30,1	32,2	33,3	36,6	41,3
Add. amount of adhesive per drill hole for Through fastening per 10mm of fixture thickness		[ml/10mm]	1,6	1,6	1,6	1,6	1,6	2,1	2,9	2,9	2,6	2,6	2,6
Drill holes per cartridge ²⁾ VMZ 150/VMZ 280		[Quan.]	9/21	8/19	7/16	6/15	6/13	5/11	3/7	3/7	3/7	3/6	2/5
Drill holes per cartridge ²⁾ VMZ 345/VMZ 420		[Quan.]	27/34	23/30	20/26	19/24	17/21	14/18	10/12	9/11	9/11	8/10	7/9

¹⁾The annular gap of the clearance hole must be completely filled with adhesive after fixing
²⁾Values shown are for pre-installation. For through fastening additional adhesive is required to completely fill the clearance hole in the fixture
³⁾Values in brackets are for Type LG
⁴⁾Max. long term temperature +50 °C / max. short term temperature +80 °C

For anchor designing an easy to operate CD-ROM is available on request or can be downloaded at www.mkt.de.

Pre-installation



Through fastening

