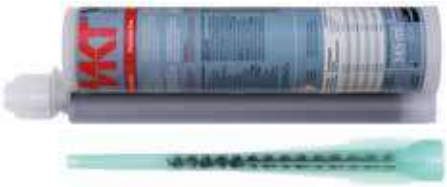
Injection System VMZ

Conical Stud VMZ-A

Cartridge VMZ 150
Coaxial Cartridge
for silicone guns
Content: 150ml

Cartridge VMZ 280
Coaxial Cartridge
for silicone guns
Content: 280ml, incl. 2 Static mixer on Cartridge



Cartridge VMZ 345
Side-by-side Cartridge
Content: 345ml

Cartridge VMZ 420
Coaxial Cartridge
Content: 420ml

Cartridge VMZ 345 express
Side-by-side Cartridge
Content: 345ml

ETA 04/0092 | SEISMIC M10-M24 | ZIVILSCHUTZ ≥ VMZ 50 M8 | F30-F120 Fire tested | M10-M24 HCR | M10-M24

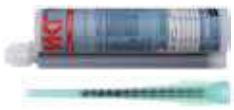
Advantages:
- Small thickness of concrete slab
- No load reduction for wet or water-filled d ill holes (drill holes d_0=14mm and larger)
- Approved from -5 °C to+40°C temperature of base material while installing
- Approved to use under seismic action according to the performance category C1 and C2 (M10-M24)
- Through fastening installation possible for M10 and bigger (no additional accessories required)
- VMZ-A 75 M12: drill hole like M10 but connection thread M12 (ideally suited for through fastening installation)
- With fi e test report
- Large variety of different diameters, anchorage depths and lengths
- Very economic fixing , optimized to the requirements of the fixin
- Opened cartridges can be re-used with a new mixer nozzle
- Tested according to ZTV tunnel temperature curve (M10-M24 HCR).

Applications:
Heavy duty fastenings in cracked and non-cracked concrete, e.g. steel beams, steel supports, railings, brackets, facade substructures, cable trays, fixing of bridge railings according to GEL 14 (VMZ 75 M12-40/135 A4) and GEL 33 (VMZ 90 M16-60/175 A4).

Range of loading: 4,3 kN - 105,7 kN
Range of concrete quality: C20/25 - C50/60
Material: Steel, zinc plated, Stainless steel A4, Stainless steel HCR
on demand: hot dip galvanized or sheradized

Description
The Injection System VMZ consists of an anchor rod with conical expansion elements and a 2 component injection adhesive. This combination provides extremely high load bearing capacity even at minimum edge distance and spacing. The VMZ system combines the benefits of bonded anchors and expansion anchors in a European technical approved fastening system for both cracked and non-cracked concrete.

Injection Cartridge VMZ



- Two component cartridge, styrene-free
- Various cartridge systems
- Approved for cracked and non-cracked concrete

Description	Ref. No.	Content ml	Content of master box pcs.	Weight per master box kg	Weight per piece kg
Cartridge VMZ 150	28999301	150	12	4,32	0,36
Cartridge VMZ 280[1)]	28252601	280	12	6,70	0,56
Cartridge VMZ 345	28255310	345	12	8,28	0,69
Cartridge VMZ 420	28254701	420	12	9,84	0,83
Cartridge VMZ 345 express	28254201	345	12	8,00	0,65
Static mixer VM-X (for all cartridge)	28305111	-	12	0,12	0,01
Mixer extension VM-XE 10/200 (200mm)	28306011	-	12	-	0,01
Mixer extension VM-XE 10/500 (500mm)	85951101	-	10	0,02	-
Installation wedge VMZ-MK	33300103	-	10	-	0,01

One static mixer as well as one screw-on cap comes with each cartridge.
Usable length of static mixer see page 84.
[1)]Cartridge VMZ 280 comes with 2 mixers.

Conical Stud VMZ-A

Steel, zinc plated

- For use in structures subject to dry internal conditions
- Version LG: with thread to concrete surface
- Drill hole depth from 42mm

Description	Ref. No.	Drill hole Ø x depth mm	Setting depth mm	Seismic C1 / C2	Fixture thickness mm	Anchor length mm	Thread mm	Pkg. cont. pcs.	Weight per pkg. kg
VMZ-A 40 M8-15/65	32115101	10x42	41	- / -	15	65	M8x22	10	0,30
VMZ-A 50 M8-15/80	32120101	10x55	52	- / -	15	80	M8x22	10	0,36
VMZ-A 50 M8-30/95	32135101	10x55	52	- / -	30	95	M8x31	10	0,41
VMZ-A 50 M8-45/110	32145101	10x55	52	- / -	45	110	M8x31	10	0,47
VMZ-A 60 M10-10/85	32205101	12x65	63	✓ / ✓	10	85	M10x18	10	0,61
VMZ-A 60 M10-20/95	32220101	12x65	63	✓ / ✓	20	95	M10x27	10	0,66
VMZ-A 60 M10-30/105	32225101	12x65	63	✓ / ✓	30	105	M10x27	10	0,72
VMZ-A 60 M10-60/135	32235101	12x65	63	✓ / ✓	60	135	M10x47	10	0,87
VMZ-A 60 M10-100/175	32245101	12x65	63	✓ / ✓	100	175	M10x57	10	1,10
VMZ-A 75 M10-20/110	32255101	12x80	78	✓ / ✓	20	110	M10x27	10	0,75
VMZ-A 75 M12-25/120	32323171	12x80	78	✓ / ✓	25	120	M12x37	10	0,85
VMZ-A 75 M12-40/135	32324171	12x80	78	✓ / ✓	40	135	M12x52	10	0,95
VMZ-A 75 M12-60/155	32333101	12x80	78	✓ / ✓	60	155	M12x72	10	1,05
VMZ-A 75 M12-80/175	32336101	12x80	78	✓ / ✓	80	175	M12x87	10	1,20
VMZ-A 70 M12-25/115	32323101	14x75	74	✓ / ✓	25	115	M12x36	10	1,20
VMZ-A 80 M12-10/110	32305101	14x85	84	✓ / ✓	10	110	M12x21	10	1,17
VMZ-A 80 M12-25/125	32325101	14x85	84	✓ / ✓	25	125	M12x36	10	1,28
VMZ-A 80 M12-50/150	32330101	14x85	84	✓ / ✓	50	150	M12x46	10	1,49
VMZ-A 80 M12-100/200	32345101	14x85	84	✓ / ✓	100	200	M12x71	10	1,93
VMZ-A 80 M12-125/225	32355101	14x85	84	✓ / ✓	125	225	M12x71	10	2,17
VMZ-A 80 M12-165/265	32365101	14x85	84	✓ / ✓	165	265	M12x71	10	2,57
VMZ-A 95 M12-25/140	32327101	14x100	99	✓ / ✓	25	140	M12x36	10	1,40
VMZ-A 100 M12-25/145	32375101	14x105	104	✓ / ✓	25	145	M12x36	10	1,46
VMZ-A 100 M12-60/180	32385101	14x105	104	✓ / ✓	60	180	M12x56	10	1,75
VMZ-A 100 M12-100/220	32390101	14x105	104	✓ / ✓	100	220	M12x84	10	2,12
VMZ-A 110 M12-25/155	32377101	14x115	114	✓ / ✓	25	155	M12x36	10	1,55
VMZ-A 125 M12-25/170	32379101	14x130	129	✓ / ✓	25	170	M12x36	10	1,75
VMZ-A 90 M16-30/145	32555101	18 x 98	94	✓ / ✓	30	145	M16x44	10	2,20
VMZ-A 105 M16-30/160	32550101	18x113	109	✓ / ✓	30	160	M16x44	10	2,45
VMZ-A 125 M16-30/180	32515101	18x133	130	✓ / ✓	30	180	M16x44	10	2,78
VMZ-A 125 M16-60/210	32520101	18x133	130	✓ / ✓	60	210	M16x55	10	3,60
VMZ-A 125 M16-100/250	32530101	18x133	130	✓ / ✓	100	250	M16x65	10	4,23
VMZ-A 125 M16-165/315	32540101	18x133	130	✓ / ✓	165	315	M16x90	10	5,25
VMZ-A 145 M16-30/200	32560101	18x153	150	✓ / ✓	30	200	M16x44	10	3,70
VMZ-A 160 M16-30/215	32502101	18x168	165	✓ / ✓	30	215	M16x44	10	3,54
VMZ-A 160 M16-60/245	32504101	18x168	165	✓ / ✓	60	245	M16x55	10	3,98
VMZ-A 160 M16-100/285	32506101	18x168	165	✓ / ✓	100	285	M16x65	10	4,62
VMZ-A 115 M20-30/175	32608101	22x120	120	✓ / ✓	30	175	M20x46	5	2,40
VMZ-A 170 M20-20/225 LG	32603101	24x180	180	✓ / ✓	20	225	M20x41	5	3,40
VMZ-A 170 M20-25/230	32605101	24x180	180	✓ / ✓	25	230	M20x33	5	3,52
VMZ-A 170 M20-50/255	32610101	24x180	180	✓ / ✓	50	255	M20x46	5	3,83
VMZ-A 170 M20-100/305	32620101	24x180	180	✓ / ✓	100	305	M20x71	5	4,46
VMZ-A 190 M20-50/275	32612101	24x200	200	✓ / ✓	50	275	M20x46	5	4,20
VMZ-A 170 M24-50/260	32705101	26x185	182	✓ / ✓	50	260	M24x50	5	4,58
VMZ-A 170 M24-100/310	32715101	26x185	182	✓ / ✓	100	310	M24x75	5	5,46
VMZ-A 200 M24-50/290 LG	32711101	26x215	212	✓ / ✓	50	290	M24x75	5	5,11
VMZ-A 200 M24-50/290	32710101	26x215	212	✓ / ✓	50	290	M24x50	5	5,11
VMZ-A 200 M24-100/340	32720101	26x215	212	✓ / ✓	100	340	M24x75	5	6,01
VMZ-A 225 M24-50/315	32712101	26x240	237	✓ / ✓	50	315	M24x50	5	5,73

Other lengths or threads on demand.

Dispenser and accessories for drill hole cleaning see page 84/85.

Conical Stud VMZ-A A4

Stainless steel A4 / 316

- For use in structures subject to dry internal conditions or external atmospheric exposure
- Version LG: with thread to concrete surface
- Drill hole depth from 42mm

Description	Ref. No.	Drill hole Ø x depth mm	Setting depth mm	Seismic C1 / C2	Fixture thickness mm	Anchor length mm	Thread mm	Pkg. cont. pcs.	Weight per pkg. kg
VMZ-A 40 M8-15/65 A4	32115501	10x42	41	- / -	15	65	M8x22	10	0,30
VMZ-A 50 M8-15/80 A4	32120501	10x55	52	- / -	15	80	M8x22	10	0,36
VMZ-A 50 M8-30/95 A4	32135501	10x55	52	- / -	30	95	M8x31	10	0,41
VMZ-A 50 M8-45/110 A4	32145501	10x55	52	- / -	45	110	M8x31	10	0,47
VMZ-A 60 M10-10/85 A4	32205501	12x65	63	✓ / ✓	10	85	M10x18	10	0,61
VMZ-A 60 M10-20/95 A4	32220501	12x65	63	✓ / ✓	20	95	M10x27	10	0,66
VMZ-A 60 M10-30/105 A4	32225501	12x65	63	✓ / ✓	30	105	M10x27	10	0,72
VMZ-A 60 M10-60/135 A4	32235501	12x65	63	✓ / ✓	60	135	M10x47	10	0,87
VMZ-A 60 M10-100/175 A4	32245501	12x65	63	✓ / ✓	100	175	M10x57	10	1,10
VMZ-A 75 M10-20/110 A4	32255501	12x80	78	✓ / ✓	20	110	M10x27	10	0,75
VMZ-A 75 M10-40/130 A4	32265501	12x80	78	✓ / ✓	40	130	M10x47	10	0,86
VMZ-A 75 M12-25/120 A4	32323571	12x80	78	✓ / ✓	25	120	M12x37	10	0,85
VMZ-A 75 M12-40/135 A4	32324571	12x80	78	✓ / ✓	40	135	M12x52	10	0,95
VMZ-A 75 M12-60/155 A4	32333501	12x80	78	✓ / ✓	60	155	M12x72	10	1,05
VMZ-A 75 M12-80/175 A4	32336501	12x80	78	✓ / ✓	80	175	M12x92	10	1,20
VMZ-A 70 M12-25/115 A4	32323501	14x75	74	✓ / ✓	25	115	M12x36	10	1,20
VMZ-A 70 M12-40/130 A4	32324501	14x75	74	✓ / ✓	40	130	M12x36	10	1,33
VMZ-A 80 M12-10/110 A4	32305501	14x85	84	✓ / ✓	10	110	M12x21	10	1,17
VMZ-A 80 M12-25/125 A4	32325501	14x85	84	✓ / ✓	25	125	M12x36	10	1,28
VMZ-A 80 M12-50/150 A4	32330501	14x85	84	✓ / ✓	50	150	M12x46	10	1,49
VMZ-A 80 M12-100/200 A4	32345501	14x85	84	✓ / ✓	100	200	M12x71	10	1,93
VMZ-A 80 M12-125/225 A4	32355501	14x85	84	✓ / ✓	125	225	M12x71	10	2,17
VMZ-A 80 M12-165/265 A4	32365501	14x85	84	✓ / ✓	165	265	M12x71	10	2,57
VMZ-A 95 M12-25/140 A4	32327501	14x100	99	✓ / ✓	25	140	M12x36	10	1,40
VMZ-A 100 M12-25/145 A4	32375501	14x105	104	✓ / ✓	25	145	M12x36	10	1,46
VMZ-A 100 M12-60/180 A4	32385501	14x105	104	✓ / ✓	60	180	M12x56	10	1,75
VMZ-A 100 M12-100/220 A4	32390501	14x105	104	✓ / ✓	100	220	M12x84	10	2,12
VMZ-A 110 M12-25/155 A4	32377501	14x115	114	✓ / ✓	25	155	M12x36	10	1,55
VMZ-A 125 M12-25/170 A4	32379501	14x130	129	✓ / ✓	25	170	M12x36	10	1,75
VMZ-A 90 M16-30/145 A4	32555501	18x98	94	✓ / ✓	30	145	M16x44	10	2,20
VMZ-A 90 M16-45/160 A4	32558501	18x98	94	✓ / ✓	45	160	M16x59	10	2,78
VMZ-A 90 M16-60/175 A4	32559501	18 x 98	94	✓ / ✓	60	175	M16x74	10	3,08
VMZ-A 105 M16-30/160 A4	32550501	18x113	109	✓ / ✓	30	160	M16x44	10	2,45
VMZ-A 125 M16-30/180 A4	32515501	18x133	130	✓ / ✓	30	180	M16x44	10	2,78
VMZ-A 125 M16-60/210 A4	32520501	18x133	130	✓ / ✓	60	210	M16x55	10	3,60
VMZ-A 125 M16-100/250 A4	32530501	18x133	130	✓ / ✓	100	250	M16x65	10	4,23
VMZ-A 125 M16-165/315 A4	32540501	18x133	130	✓ / ✓	165	315	M16x90	10	5,25
VMZ-A 145 M16-30/200 A4	32560501	18x153	150	✓ / ✓	30	200	M16x44	10	3,70
VMZ-A 160 M16-30/215 A4	32502501	18x168	165	✓ / ✓	30	215	M16x44	10	3,54
VMZ-A 160 M16-60/245 A4	32504501	18x168	165	✓ / ✓	60	245	M16x55	10	3,98
VMZ-A 160 M16-100/285 A4	32506501	18x168	165	✓ / ✓	100	285	M16x65	10	4,62
VMZ-A 115 M20-30/175 A4	32608501	22x120	120	✓ / ✓	30	175	M20x46	5	2,40
VMZ-A 170 M20-20/225 LG A4	32603501	24x180	180	✓ / ✓	20	225	M20x41	5	3,40
VMZ-A 170 M20-25/230 A4	32605501	24x180	180	✓ / ✓	25	230	M20x33	5	3,52
VMZ-A 170 M20-50/255 A4	32610501	24x180	180	✓ / ✓	50	255	M20x46	5	3,83
VMZ-A 170 M20-100/305 A4	32620501	24x180	180	✓ / ✓	100	305	M20x71	5	4,46
VMZ-A 190 M20-50/275 A4	32612501	24x200	200	✓ / ✓	50	275	M20x46	5	4,20
VMZ-A 170 M24-50/260 A4	32705501	26x185	182	✓ / ✓	50	260	M24x50	5	4,58
VMZ-A 170 M24-100/310 A4	32715501	26x185	182	✓ / ✓	100	310	M24x75	5	5,46
VMZ-A 200 M24-50/290 LG A4	32711501	26x215	212	✓ / ✓	50	290	M24x75	5	5,11
VMZ-A 200 M24-50/290 A4	32710501	26x215	212	✓ / ✓	50	290	M24x50	5	5,11
VMZ-A 200 M24-100/340 A4	32720501	26x215	212	✓ / ✓	100	340	M24x75	5	6,01
VMZ-A 225 M24-50/315 A4	32712501	26x240	237	✓ / ✓	50	315	M24x50	5	5,73

Other lengths or threads on demand.

Conical Stud VMZ-A HCR

Stainless steel HCR

- For use in particularly corrosive environments
- High Corrosion Resistant Steel grade 1.4529
- Version LG: with thread to concrete surface

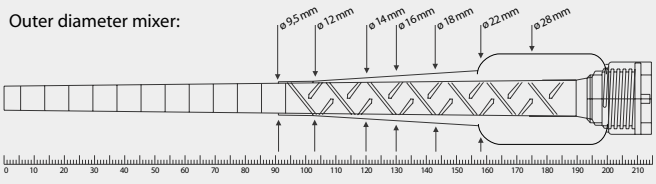
Description	Ref. No.	Drill hole Ø x depth mm	Setting depth mm	Seismic C1 / C2	Fixture thickness mm	Anchor length mm	Thread mm	Pkg. cont. pcs.	Weight per pkg. kg
VMZ-A 40 M8-15/65 HCR	32115651	10x42	41	- / -	15	65	M8x22	10	0,30
VMZ-A 50 M8-15/80 HCR	32120651	10x55	52	- / -	15	80	M8x22	10	0,36
VMZ-A 50 M8-30/95 HCR	32135651	10x55	52	- / -	30	95	M8x31	10	0,41
VMZ-A 50 M8-45/110 HCR	32145651	10x55	52	- / -	45	110	M8x31	10	0,47
VMZ-A 60 M10-10/85 HCR	32205651	12x65	63	✓ / ✓	10	85	M10x18	10	0,61
VMZ-A 60 M10-20/95 HCR	32220651	12x65	63	✓ / ✓	20	95	M10x27	10	0,66
VMZ-A 60 M10-30/105 HCR	32225651	12x65	63	✓ / ✓	30	105	M10x27	10	0,72
VMZ-A 60 M10-60/135 HCR	32235651	12x65	63	✓ / ✓	60	135	M10x47	10	0,87
VMZ-A 60 M10-100/175 HCR	32245651	12x65	63	✓ / ✓	100	175	M10x57	10	1,10
VMZ-A 75 M10-20/110 HCR	32255651	12x80	78	✓ / ✓	20	110	M10x27	10	0,75
VMZ-A 75 M12-25/120 HCR	32323671	12x80	78	✓ / ✓	25	120	M12x37	10	0,85
VMZ-A 70 M12-25/115 HCR	32323651	14x75	74	✓ / ✓	25	115	M12x36	10	1,20
VMZ-A 80 M12-10/110 HCR	32305651	14x85	84	✓ / ✓	10	110	M12x21	10	1,17
VMZ-A 80 M12-25/125 HCR	32325651	14x85	84	✓ / ✓	25	125	M12x36	10	1,28
VMZ-A 80 M12-50/150 HCR	32330651	14x85	84	✓ / ✓	50	150	M12x46	10	1,49
VMZ-A 80 M12-100/200 HCR	32345651	14x85	84	✓ / ✓	100	200	M12x71	10	1,93
VMZ-A 80 M12-125/225 HCR	32355651	14x85	84	✓ / ✓	125	225	M12x71	10	2,17
VMZ-A 80 M12-165/265 HCR	32365651	14x85	84	✓ / ✓	165	265	M12x71	10	2,57
VMZ-A 95 M12-25/140 HCR	32327651	14x100	99	✓ / ✓	25	140	M12x36	10	1,40
VMZ-A 100 M12-25/145 HCR	32375651	14x105	104	✓ / ✓	25	145	M12x36	10	1,46
VMZ-A 100 M12-60/180 HCR	32385651	14x105	104	✓ / ✓	60	180	M12x56	10	1,75
VMZ-A 100 M12-100/220 HCR	32390651	14x105	104	✓ / ✓	100	220	M12x84	10	2,12
VMZ-A 110 M12-25/155 HCR	32377651	14x115	114	✓ / ✓	25	155	M12x36	10	1,55
VMZ-A 125 M12-25/170 HCR	32379651	14x130	129	✓ / ✓	25	170	M12x36	10	1,75
VMZ-A 90 M16-30/145 HCR	32555651	18x98	94	✓ / ✓	30	145	M16x44	10	2,20
VMZ-A 105 M16-30/160 HCR	32550651	18x113	109	✓ / ✓	30	160	M16x44	10	2,45
VMZ-A 125 M16-30/180 HCR	32515651	18x133	130	✓ / ✓	30	180	M16x44	10	2,78
VMZ-A 125 M16-60/210 HCR	32520651	18x133	130	✓ / ✓	60	210	M16x55	10	3,60
VMZ-A 125 M16-100/250 HCR	32530651	18x133	130	✓ / ✓	100	250	M16x65	10	4,23
VMZ-A 125 M16-165/315 HCR	32540651	18x133	130	✓ / ✓	165	315	M16x90	10	5,25
VMZ-A 145 M16-30/200 HCR	32560651	18x153	150	✓ / ✓	30	200	M16x44	10	3,70
VMZ-A 160 M16-30/215 HCR	32502651	18x168	165	✓ / ✓	30	215	M16x44	10	3,54
VMZ-A 115 M20-30/175 HCR	32608651	22x120	120	✓ / ✓	30	175	M20x46	5	2,40
VMZ-A 170 M20-20/225 LG HCR	32603651	24x180	180	✓ / ✓	20	225	M20x41	5	3,40
VMZ-A 170 M20-25/230 HCR	32605651	24x180	180	✓ / ✓	25	230	M20x33	5	3,52
VMZ-A 170 M20-50/255 HCR	32610651	24x180	180	✓ / ✓	50	255	M20x46	5	3,83
VMZ-A 170 M20-100/305 HCR	32620651	24x180	180	✓ / ✓	100	305	M20x71	5	4,46
VMZ-A 190 M20-50/275 HCR	32612651	24x200	200	✓ / ✓	50	275	M20x46	5	4,20
VMZ-A 170 M24-50/260 HCR	32705651	26x185	182	✓ / ✓	50	260	M24x50	5	4,58
VMZ-A 200 M24-50/290 LG HCR	32705651	26x215	215	✓ / ✓	50	290	M24x75	5	5,11
VMZ-A 200 M24-50/290 HCR	32710651	26x215	215	✓ / ✓	50	290	M24x50	5	5,11
VMZ-A 200 M24-100/340 HCR	32720651	26x215	215	✓ / ✓	100	340	M24x75	5	6,01
VMZ-A 225 M24-50/315 HCR	32712651	26x240	237	✓ / ✓	50	315	M24x50	5	5,73

Other lengths or threads on demand.

Usable length Static mixer VM-X

Drill holes must always be filled f om the bottom of the hole to ensure no air pockets are trapped in the adhesive. This is only possible when the tip of the mixing nozzle reaches the very bottom of the drill hole before injecting the adhesive. If the mixing nozzle does not reach the bottom of the drill hole, a mixer extension tube must be used.

Outer diameter mixer:



Curing Time Injection Adhesive VMZ

➔ Cartridge temperature when installing min. +5°C

Temperature (°C) of the base material	Gel time	Curing time	
		dry base material	wet base material
-5°C[1]	1:30 h	6:00 h	12:00 h[2]
-4°C to -1°C[1]	45 min	6:00 h	12:00 h[2]
0°C to +4°C	20 min	3:00 h	6:00 h
+5°C to +9°C	12 min	2:00 h	4:00 h
+10°C to +19°C	6 min	1:20 h	2:40 h
+20°C to +29°C	4 min	45 min	1:30 h
+30°C to +34°C	2 min	25 min	50 min
+35°C to +39°C	1,4 min	20 min	40 min
+40°C	1,4 min	15 min	30 min

[1]Not part of ETA-17/0194 (VMZ dynamic)
[2]It must be ensured that icing does not occur in the drill hole.
The hole must be drilled and cleaned directly prior to the installation of the anchor.

Curing Time Injection Adhesive VMZ express

➔ Cartridge temperature when installing min. +5°C

Temperature (°C) of the base material	Gel time	Curing time	
		dry base material	wet base material
-5°C[1]	40 min	4:00 h	8:00 h[2]
-4°C to -1°C[1]	20 min	4:00 h	8:00 h[2]
0°C to +4°C	10 min	2:00 h	4:00 h
+5°C to +9°C	6 min	1:00 h	2:00 h
+10°C to +19°C	3 min	40 min	80 min
+20°C to +29°C	1 min	20 min	40 min
+30°C	1 min	10 min	20 min

[1]Not part of ETA-17/0194 (VMZ dynamic)
[2]It must be ensured that icing does not occur in the drill hole.
The hole must be drilled and cleaned directly prior to the installation of the anchor.

Cleaning Brush RB M6

RB M6, with connection thread M6

RBL M6, with internal and external thread M6

RBL M6 SDS, with internal thread M6

➔ With connection thread M6 – extension for large depths of drill hole and/or for through-setting installation

➔ For drilling machines with keyed chuck or with SDS adaptor for SDS plus drill holder

Description	Ref. No.	Suitable for drill hole Ø mm	Total length of brush mm	Suitable for VMZ-A	Suitable for VMZ-A dyn	Suitable for VMZ-IG	Pkg. cont. pcs.	Weight per piece kg
RB 10 M6	33510101	10	130	M8	-	M6	1	0,05
RB 12 M6	33512101	12	140	M10, 75 M12	-	M8	1	0,05
RB 14 M6	33514101	14	180	M12	M12	M10	1	0,05
RB 18 M6	33518101	18	200	M16	M16	M12	1	0,05
RB 22 M6	33522101	22	220	115 M20	-	115 M16	1	0,05
RB 24 M6	33524101	24	250	M20	M20	M16	1	0,06
RB 26 M6	33526101	26	290	M24	-	M20	1	0,06
RBL M6	33968101	Brush extention 150mm with connection thread M6					1	0,09
RBL M6 SDS	33350101	SDS Plus adapter with internal thread M6					1	0,06

Blow-out pump VM-AP

➔ For assessment-compliant air-cleaning of drill holes with a diameter up to 18 mm (VMZ)

➔ For best drill hole cleaning, the hose must reach the bottom of the drill hole

Description	Ref. No.	Hose Ø mm	For drill hole Ø mm	Max. drill hole depth[2] mm	Pkg. cont. pcs.	Weight per piece kg
VM-AP 360, blow-out pump	33200101	8	8[1]-20	330	1	0,27

[1]With extension tube Ø 6 x 100mm
[2]For through fastening: Maximum drill hole depth through fi ture

Air gun VM-ABP

- For assessment-compliant drill hole cleaning with compressed air for drill holes with a diameter larger than 6 mm
- For best drill hole cleaning, the nozzle of the air gun must reach the bottom of the drill hole

Description	Ref. No.	Nozzle-ø mm	For drill hole Ø mm	Max. drill hole depth[1] mm	Pkg. cont. pcs.	Weight per piece kg
VM-ABP 200	33090101	5	6-20	240	1	0,55
VM-ABP 250	33100101	16	18-40	240	1	1,00
VM-ABP 500	33106101	16	18-40	480	1	1,30

[1]For through fastening: Maximum drill hole depth through fi ture

Dispenser VM-P Profi

- Professional dispenser with an ideal center of gravity for more comfortable working
- Automatic pressure release for minimum adhesive overrun

Description	Ref. No.	Suitable for cartridge		Pkg. cont. pcs.	Weight per piece kg
VM-P 345 Profi	28350511	150ml, 280ml, 300ml, 345ml	also suitable for silicone cartridges	1	1,00
VM-P 380 Profi	28351001	380ml, 410ml, 420ml		1	1,10

Dispenser VM-P Standard

- For occasional use, metal version
- Piston rod with adjusting screw

Description	Ref. No.	Suitable for cartridge		Pkg. cont. pcs.	Weight per piece kg
VM-P 345 Standard	28350505	150ml, 280ml, 300ml, 345ml	also suitable for silicone cartridges	1	1,00
VM-P 380 Standard	28353005	380ml, 410ml, 420ml		1	1,15

Dispenser VM-P Pneumatic

- Professional air tool with an optimum center of gravity and quick cartridge exchange
- Automatic pressure release system reduces adhesive overrun to a minimum
- Single-hand pressure regulation to adjust the piston speed
- With compressed air connection nipple

Description	Ref. No.	Suitable for cartridge		Pkg. cont. pcs.	Weight per piece kg
VM-P 345 Pneumatic	28350601	280ml, 300ml, 345ml	max. working pressure 8bar, 40l/min	1	2,41
VM-P 380 Pneumatic	28352002	380ml, 410ml, 420ml	max. working pressure 8bar, 40l/min	1	2,00

Dispenser VM-P Akku

[1]with battery 18V/2,0 Ah

- Professional, solid battery cartridge dispenser in a plastic case
- Repeat function, for retrieving the last fill qua tity
- Stepless variable pressing speed
- Overrun-quantity-stop by automatic return after release of the dispending switch

Description	Ref. No.	Suitable for cartridge	press-out force kN	Weight[1] kg	Dimensions[1] L x B x H mm	Pkg. cont. pcs.	Weight per piece kg
VM-P 345 Akku	28350801	345ml	5,0	3,53	395 x 180 x 285	1	7,72
VM-P 380 Akku	28352601	380ml, 410ml, 420ml	3,95	3,62	375 x 180 x 285	1	7,80
Accessories (for all models)							
Replacement battery	28352411		18 V/2,0 Ah			1	1,00
Shoulder strap	28359991		adjustable			1	0,02

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

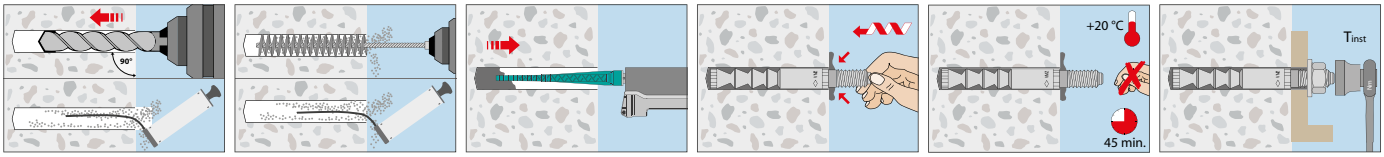
Approved loads (static or quasi-static) for single anchor without influence of spacing and edge distance for temperature range -40°C to +80°C[5] (Approved loads for temperature range -40°C to +120°C see ETA-04/0092). Total safety factor as per ETAG 001 included (γ_M and γ_F). Load capacities under fi e exposure see page 168.

Loads and performance data **Injection System VMZ, steel zinc plated M8-M12**

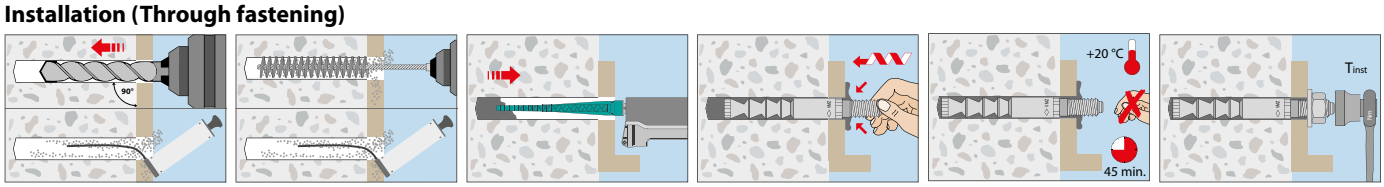
			40 M8	50 M8	60 M10	75 M10	75 M12	70 M12	80 M12	95 M12	100 M12	110 M12	125 M12
							cracked concrete						
Mean ultimate loads, tension	C25/30 N_{um}	[kN]	12,3	19,5	28,0	29,5	34,9	41,0	48,2	51,6	67,2	67,2	67,2
Mean ultimate loads, shear	C25/30 V_{um}	[kN]	14,6	14,6	23,2	23,2	33,7	33,7	33,7	33,7	33,7	33,7	33,7
Approved loads, tension	C20/25 appr. N	[kN]	4,3	6,1	8,0	11,1	11,1	10,0	12,3	15,9	17,1	19,8	24,0
	C25/30 appr. N	[kN]	4,8	6,6	8,7	11,9	12,2	11,0	13,4	17,4	18,8	21,7	26,2
	C30/37 appr. N	[kN]	5,3	7,4	9,7	11,9	13,5	12,2	14,9	19,3	20,9	24,1	27,1
	C40/50 appr. N	[kN]	6,1	8,6	11,3	11,9	15,7	14,2	17,3	22,4	24,2	27,1	27,1
	C50/60 appr. N	[kN]	6,7	8,6	11,9	11,9	16,7	15,6	19,0	24,6	26,6	27,1	27,1
							non-cracked concrete						
Approved loads, tension	C20/25 appr. N	[kN]	4,3	8,5	11,2	11,9	15,6	14,1	17,2	19,0	24,0	23,8	23,8
	C25/30 appr. N	[kN]	4,7	8,6	11,9	11,9	16,7	15,4	18,9	20,9	26,3	26,1	26,1
	C30/37 appr. N	[kN]	5,2	8,6	11,9	11,9	16,7	17,1	20,9	23,2	27,1	27,1	27,1
	C40/50 appr. N	[kN]	6,1	8,6	11,9	11,9	16,7	19,9	24,3	25,7	27,1	27,1	27,1
	C50/60 appr. N	[kN]	6,6	8,6	11,9	11,9	16,7	21,8	25,7	25,7	27,1	27,1	27,1
							cracked and non-cracked concrete						
Approved loads, shear	≥ C20/25 appr. V	[kN]	8,0	8,0	12,0	12,0	19,4	19,4	19,4	19,4	19,4	19,4	19,4
Approved loads, shear Type LG	≥ C20/25 appr. V	[kN]	8,0	8,0	12,0	12,0	19,4	19,4	19,4	19,4	19,4	19,4	19,4
Approved bending moments	appr. M	[Nm]	17,1	17,1	34,3	34,3	60,0	60,0	60,0	60,0	60,0	60,0	60,0
Spacing and edge distance													
Effective anchorage depth	h_{ef}	[mm]	40	50	60	75	75	70	80	95	100	110	125
Characteristic spacing	$s_{cr,N}$	[mm]	120	150	180	225	225	210	240	285	300	330	375
Characteristic edge distance	$c_{cr,N}$	[mm]	60	75	90	112,5	112,5	105	120	142,5	150	165	187,5
							cracked concrete						
Minimum thickness of concrete slab	h_{min}	[mm]	80	80	100	110	110	110	110	130	130	140	160
Minimum spacing	s_{min}	[mm]	40	40	40	40	50	55	40	40	50	50	50
Minimum edge distance	c_{min}	[mm]	40	40	40	40	50	55	50	50	50	50	50
							non-cracked concrete						
Minimum thickness of concrete slab	h_{min}	[mm]	80	80	100	110	110	110	110	130	130	140	160
Minimum spacing	s_{min}	[mm]	40	40	50	50	50	55	55	55	801)	801)	801)
Minimum edge distance	c_{min}	[mm]	40	40	50	50	50	55	55	55	551)	551)	551)
Installation parameters													
Drill hole diameter	d_o	[mm]	10	10	12	12	12	14	14	14	14	14	14
Diameter of clearance hole in the fi ture Pre-installation	d_f	[mm]	9	9	12	12	14	14	14	14	14	14	14
Diameter of clearance hole in the fi ture Through fastening[2]	d_f	[mm]	- [4]	- [4]	14	14	14	16	16	16	16	16	16
Depth of drill hole	ho	[mm]	42	55	65	80	80	75	85	100	105	115	130
Installation torque	$T_{inst} \leq$	[Nm]	10	10	15	15	25	25	25	25	30	30	30
Width across nut	SW	[mm]	13	13	17	17	19	19	19	19	19	19	19
Amount of adhesive per drill hole[3]		[ml]	3,4	4,1	6,1	7,0	7,0	6,8	8,6	9,0	9,2	9,4	9,6
Add. amount of adhesive per drill hole for Through fastening per 10mm of fi ture thickness		[ml/ 10mm]	-	-	1,0	1,0	0,7	1,2	1,2	1,2	1,2	1,2	1,2
Drill holes per cartridge[3] VMZ 150 / VMZ 280		[Quan.]	31/70	26/58	18/39	15/34	15/34	16/35	12/27	12/26	11/26	11/25	11/24
Drill holes per cartridge[3] VMZ 345 / VMZ 420		[Quan.]	88/111	73/92	49/62	43/54	43/54	44/55	34/44	33/42	32/41	32/40	31/39

[1] For edge distance c ≥ 80 mm, minimal spacing distance s_{min} = 55 mm
[2] The annular gap of the clearance hole must be completely filled with adhesive after fixing.
[3] Values shown are for pre-installation. For through fastening additional adhesive is required to completely fill the clearance hole in the fixtur
[4] Not for use in through fastening applications.
[5] Max. long term temperature +50 °C / max. short term temperature +80 °C

Installation (Pre-installation)



Installation (Through fastening)



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°C[4] (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 fi e exposure see page 168.

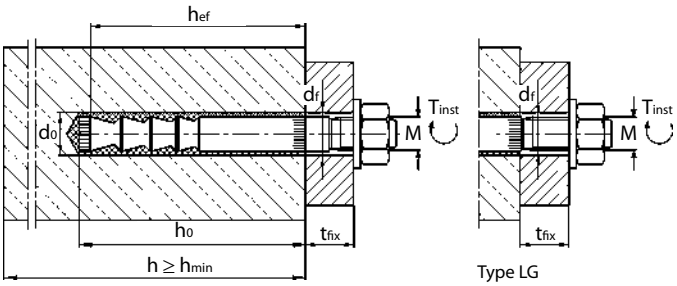
Loads and performance data **Injection System VMZ, steel zinc plated M16-M24**

			90 M16	105 M16	125 M16	145 M16	160 M16	115 M20	170 M20 170 M20 LG	190 M20 190 M20 LG	170 M24 170 M24 LG	200 M24 200 M24 LG	225 M24 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]	62,8	62,8	62,8	62,8	62,8	68,6	150,7(98,0[3])	150,7(98,0[3])	179,5(140,8[3])	179,5(140,8[3])	179,5(140,8[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	74,4	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	98,5
	C40/50 appr. N	[kN]	29,0	36,5	47,4	50,5	46,2	40,8	75,2	88,9	75,2	96,0	105,7
	C50/60 appr. N	[kN]	31,7	40,0	52,0	52,9	46,2	40,8	82,4	89,5	82,4	105,2	105,7
							cracked and non-cracked concrete						
Approved loads, shear	≥ C20/25 appr. V	[kN]	29,3	36,0	36,0	36,0	36,0	35,7	76,0	85,1	76,0	97,0	101,7
Approved loads, shear Type LG	≥ C20/25 appr. V	[kN]	29,3	36,0	36,0	36,0	36,0	35,7	56,0	56,0	76,0	80,6	80,6
Approved bending moments	appr. M	[Nm]	152,0	152,0	152,0	152,0	152,0	200,0	296,6	296,6	512,0	512,0	512,0
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 fi ture 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 fi ture 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	$T_{inst} \leq$	[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 fi ture 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

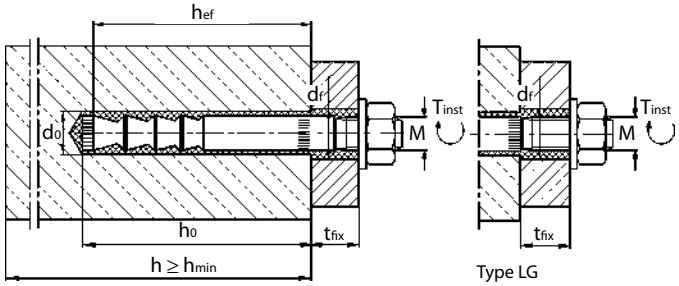
[1] The annular gap of the clearance hole must be completely filled with adhesi e after fixing
[2] Values shown are for pre-installation. For through fastening additional adhesive is required to completely fill the clearance hole in the fixtur
[3] Values in brackets are for Type LG
[4] Max. long term 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



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

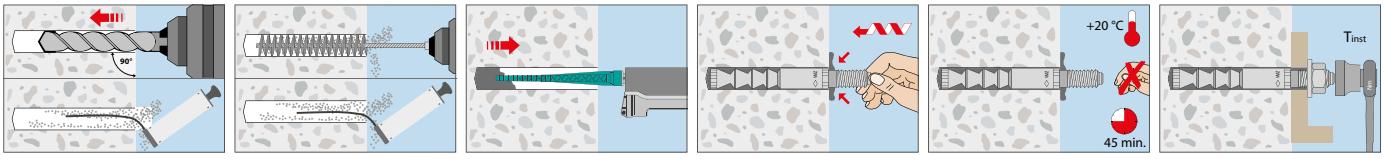
Approved loads (static or quasi-static) for single anchor without influence of spacing and edge distance for temperature range -40°C to +80°C[5] (Approved loads for temperature range -40°C to +120°C see ETA-04/0092). Total safety factor as per ETAG 001 included (γ_M and γ_F). Load capacities under fi e exposure see page 168.

Loads and performance data **Injection System VMZ Stainless steel A4 / HCR M8-M12**

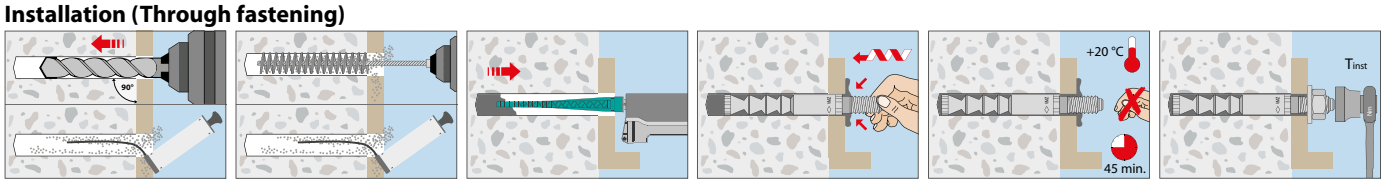
				40 M8	50 M8	60 M10	75 M10	75 M12	70 M12	80 M12	95 M12	100 M12	110 M12	125 M12
								cracked concrete						
Mean ultimate loads, tension	C25/30	N_{um}	[kN]	12,3	19,5	28,0	29,5	34,9	41,0	48,2	51,6	67,2	67,2	67,2
Mean ultimate loads, shear	C25/30	V_{um}	[kN]	17,6	17,6	27,8	27,8	40,5	40,5	40,5	40,5	40,5	40,5	40,5
Approved loads, tension	C20/25	appr. N	[kN]	4,3	6,1	8,0	11,1	11,1	10,0	12,3	15,9	17,1	19,8	24,0
	C25/30	appr. N	[kN]	4,8	6,6	8,8	11,9	12,2	11,0	13,4	17,4	18,8	21,7	26,2
	C30/37	appr. N	[kN]	5,3	7,4	9,7	11,9	13,5	12,2	14,9	19,3	20,9	24,1	27,1
	C40/50	appr. N	[kN]	6,1	8,6	11,3	11,9	15,7	14,2	17,3	22,4	24,2	27,1	27,1
	C50/60	appr. N	[kN]	6,7	8,6	11,9	11,9	16,7	15,6	19,0	24,6	26,6	27,1	27,1
								non-cracked concrete						
Approved loads, tension	C20/25	appr. N	[kN]	4,3	8,5	11,2	11,9	15,6	14,1	17,2	19,0	24,0	23,8	23,8
	C25/30	appr. N	[kN]	4,7	8,6	11,9	11,9	16,7	15,4	18,8	20,9	26,3	26,1	26,1
	C30/37	appr. N	[kN]	5,2	8,6	11,9	11,9	16,7	17,1	20,9	23,2	27,1	27,1	27,1
	C40/50	appr. N	[kN]	6,1	8,6	11,9	11,9	16,7	19,9	24,3	25,7	27,1	27,1	27,1
	C50/60	appr. N	[kN]	6,6	8,6	11,9	11,9	16,7	21,8	25,7	25,7	27,1	27,1	27,1
								cracked and non-cracked concrete						
Approved loads, shear	≥ C20/25	appr. V	[kN]	8,6	8,6	13,1	13,1	19,4	19,4	19,4	19,4	19,4	19,4	19,4
Approved loads, shear Type LG	≥ C20/25	appr. V	[kN]	8,6	8,6	13,1	13,1	19,4	19,4	19,4	19,4	19,4	19,4	19,4
Approved bending moments		appr. M	[Nm]	17,1	17,1	34,3	34,	60,0	60,0	60,0	60,0	60,0	60,0	60,0
Spacing and edge distance														
Effective anchorage depth		h_{ef}	[mm]	40	50	60	75	75	70	80	95	100	110	125
Characteristic spacing		$s_{cr,N}$	[mm]	120	150	180	225	225	210	240	285	300	330	375
Characteristic edge distance		$c_{cr,N}$	[mm]	60	75	90	112,5	112,5	105	120	142,5	150	165	187,5
								cracked concrete						
Minimum thickness of concrete slab		h_{min}	[mm]	80	80	100	110	110	110	110	130	130	140	160
Minimum spacing		s_{min}	[mm]	40	40	40	40	50	55	40	40	50	50	50
Minimum edge distance		c_{min}	[mm]	40	40	40	40	50	55	50	50	50	50	50
								non-cracked concrete						
Minimum thickness of concrete slab		h_{min}	[mm]	80	80	100	110	110	110	110	130	130	140	160
Minimum spacing		s_{min}	[mm]	40	40	50	50	50	55	55	55	801)	801)	801)
Minimum edge distance		c_{min}	[mm]	40	40	50	50	50	55	55	55	551)	551)	551)
Installation parameters														
Drill hole diameter		d_o	[mm]	10	10	12	12	12	14	14	14	14	14	14
Diameter of clearance hole in the fi ture Pre-installation		df	[mm]	9	9	12	12	14	14	14	14	14	14	14
Diameter of clearance hole in the fi ture Through fastening[2]		df	[mm]	- 4)	- 4)	14	14	14	16	16	16	16	16	16
Depth of drill hole		h_o	[mm]	42	55	65	80	80	75	85	100	105	115	130
Installation torque		$T_{inst} \leq$	[Nm]	10	10	15	15	25	25	25	25	30	30	30
Width across nut		SW	[mm]	13	13	17	17	19	19	19	19	19	19	19
Amount of adhesive per drill hole[3]			[ml]	3,4	4,1	6,1	7,0	7,0	6,8	8,6	9,0	9,2	9,4	9,6
Add. amount of adhesive per drill hole for Through fastening per 10mm of fi ture thickness			[ml/ 10mm]	-	-	1,0	1,0	0,7	1,2	1,2	1,2	1,2	1,2	1,2
Drill holes per cartridge[3] VMZ 150/VMZ 280			[Quan.]	31/70	26/58	18/39	15/34	15/34	16/35	12/27	12/26	11/26	11/25	11/24
Drill holes per cartridge[3]) VMZ 345/VMZ 420			[Quan.]	88/111	73/92	49/62	43/54	43/54	44/55	34/44	33/42	32/41	32/40	31/39

[1]For edge distance c ≥ 80 mm, minimal spacing distance s_{min} = 55 mm
[2]The annular gap of the clearance hole must be completely filled with adhesive after fixing
[3]Values shown are for pre-installation. For through fastening additional adhesive is required to completely fill the clearance hole in the fixtur
[4]Not for use in through fastening applications.
[5]Max. long term temperature +50 °C / max. short term temperature +80 °C

Installation (Pre-installation)



Installation (Through fastening)



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°C[4] (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 fi e exposure see page 168.

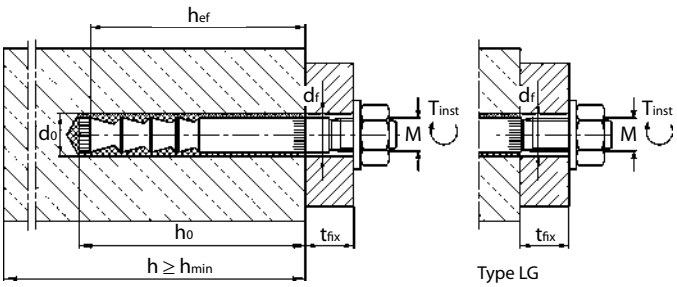
Loads and performance data **Injection System VMZ Stainless steel A4 / HCR M16-M24**

				90 M16	105 M16	125 M16	145 M16	160 M16	115 M20	170 M20 170 M20 LG	190 M20 190 M20 LG	170 M24 170 M24 LG	200 M 24 200 M 24 LG	225 M24 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 fi ture 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 fi ture 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		$T_{inst} \leq$	[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 fi ture 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 fixtur
[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