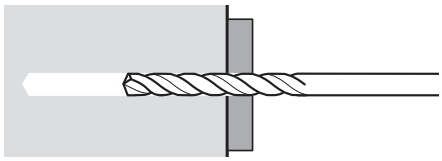
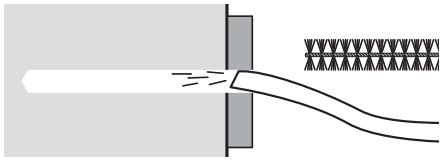
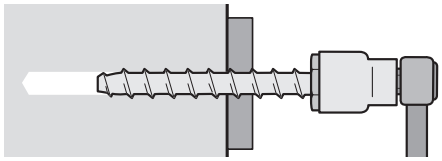
Installation:



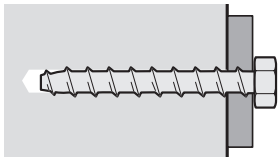
1 Drill a hole with correct diameter and depth through fixture and into the concrete



2 Clean the drilled hole thoroughly



3 Screw in the Multi-Monti - manual or machine driven



4 The installation is finished

Advantages:

Expansion free.
Through fixing.
Installation is economic and easy - without use of special tools.
Reduction of installation time up to 50%.
Torque control is not required.
Can be installed close to edges.
Anchorages can be designed in Expandet Calculation Software.

For fixing of brackets, balcony railings, suspended ceilings, wood- and steel structures etc. in concrete and other solid base materials

Materials:

Multi-Monti is supplied in zinc plated minimum 5 μm.
Zinc plated: Steel in accordance with EN 10263-4
Multi-Monti in Stainless A4 and HCR steel is only supplied on request.

Approvals:

Zinc plated:
M 6 to M10 are fire tested in accordance with DIN 4102-1.
M7,5 to M10 are VdS-approved.

Fire Resistance Classification F120

VdS

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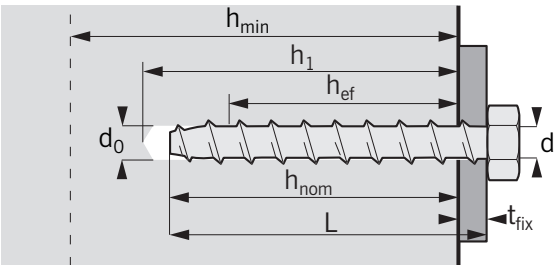


Type	Dimensions				Fixing								Load Capacities			
													Non-cracked concrete		Cracked concrete	
	d	L		t_{fix}	d_0	h_1	h_{nom}	h_{ef}	T_{inst}	h_{min}	S_{min}	C_{min}	N_{Rd}	V_{Rd}	N_{Rd}	V_{Rd}
Multi-Monti	Bolt diameter mm	Anchor length mm	Key size mm	Thickness of fixture (Max.) mm	Drill diameter mm	Depth of drilled hole (Min.) mm	Embedment depth mm	Effective anchorages depth mm	Max. setting torque Nm (1)	Thickness of concrete member, min., mm	Minimum allowable spacing mm	Minimum allowable edge distance mm	Design resistance tension kN◆	shear kN◇	Design resistance tension kN◆	shear kN◇
with internal combi thread, zinc plated																
MMS-I 7,5x55	7,5	55	13	-	6	60	55	40,0	-	100	50	50	4,1	4,9	2,9	4,9
with external thread, zinc plated																
MMS-ST 6x60	6	60	8	15	5	55	50	36,5	12	90	40	30	4,2	4,1	3,6	4,1
MMS-ST 7,5x70	7,5	70	10	25	6	55	50	36,0	20	90	40	40	3,6	4,9	2,5	4,9
MMS-ST 10x80 •	10	80	13	25	8	65	55	39,0	50	100	50	50	5,6	10,7	4,1	10,7
with large head, zinc plated																
MMS-MS 7,5x50	7,5	50	T30	5	6	50	45	31,5	20	90	50	50	3,3	4,9	2,2	4,2
with pan head, zinc plated																
HMS-P 5x30	5	30	T20	1	4	35	30	20,5	-	80	30	30	1,8	2,6	1,3	2,2
HMS-P 5x50	5	50	T20	15	4	40	35	24,8	-	80	30	30	2,5	2,6	1,8	2,6
with countersunk head, zinc plated																
HMS-F 6x40	6	40	T30	10	5	35	30	19,5	-	90	40	30	2,0	3,5	1,4	2,5
MMS-F 6x60	6	60	T30	15	5	50	45	32,3	-	90	40	30	3,0	3,9	2,0	3,6
MMS-F 6x80	6	80	T30	35	5	50	45	32,3	-	90	40	30	3,0	3,9	2,0	3,6
with eye, zinc plated																
HMS-R 6x40	6	40	Tool	-	5	45	40	28,0	-	90	40	30	2,2	1,9	1,6	1,9

• Included in ETA-approval.

◆ Design resistance for tension is valid for a single anchor in concrete C20/25 not influenced by edge distance and/or spacing: $C \geq 1{,}5\ h_{ef}$ and $S \geq 3\ h_{ef}$. If $1{,}5\ h_{ef} < C_{min}$: $C \geq C_{min}$ and $S \geq 3\ h_{ef}$.
$\Psi_{re,N} = 1$ (Normal reinforcement according to ETAG 001, Annex C - 5.2.2.4).

◇ Design resistance for shear is valid for a single anchor in concrete ≥C20/25 not influenced by edge distance and/or spacing: $C \geq 10\ h_{ef}$ and $S \geq 3\ h_{ef}$.

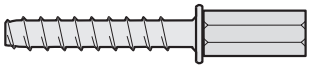
(1) Torque is recommended maximum.

Combined resistance shall be verified if both tension and shear actions are applied. See *"Principles for Fastening"* page 5 (Verification Method 2).

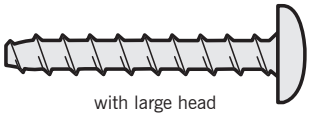
Partial safety factor for material (γ_m) is included. Partial safety factor for action (γ_f) has to be applied in accordance with national building code. If no guidance for γ_f exists ETAG 001, Annex C recommends factor 1,35 for permanent actions and factor 1,5 for variable actions.

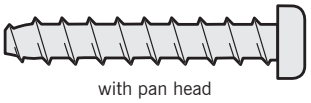
When calculating load capacities for anchors or anchorgroup use Expandet Calculation Software allowing for design with individual edge distance and spacing in accordance with ETAG 001, Annex C, Design Method A. Download Expandet Calculation Software for free at www.expandet.com.

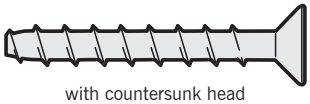
Important: See Expandet's "*Principles for fastening*" for general information on fastening as well as information on limited liability.
(Can be downloaded at www.expandet.com)

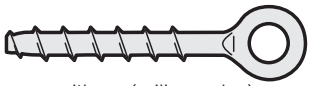

with internal combi thread


with external thread


with large head


with pan head


with countersunk head


with eye (ceiling anchor)

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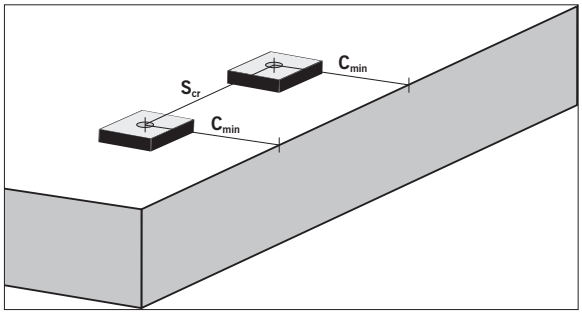
MULTI-MONTI



Design shear load capacity for a single anchor at minimum edge distance (C_{min})◆

HMS EG / MMS EG		HMS-P		MMS-St 6	MMS-St 7,5	MMS-St 10	HMS-F 6x40	MMS-F 6x60	MMS-F 6x80	MMS-I	MMS-MS
h_{nom} Embedment depth	mm	30	35	50	50	65	30	45	45	55	45
$V_{Rd,c}$ (cracked concrete)	kN*	0,7	0,7	1,2	1,3	2,1	0,9	1,2	1,2	1,4	1,3
$V_{Rd,c}$ (non-cracked concrete)	kN*	0,9	1,0	1,7	1,9	2,9	1,2	1,7	1,7	1,9	1,8
C_{min}	mm	30	30	30	40	50	30	30	30	40	40
S_{cr}	mm	90	90	90	120	150	90	90	90	120	120

◆ Above design shear load capacity is valid at minimum edge distance in concrete C20/25 providing that characteristic spacing is ≥ S_{cr}.

Partial safety factor for edge failure (γ_{mc}) is included.

Design shear load capacity for steel failure and resistance against bending (lever arm) for a single anchor, zinc plated◇

HMS EG / MMS EG		HMS-P		MMS-St 6	MMS-St 7,5	MMS-St 10	HMS-F 6x40	MMS-F 6x60	MMS-F 6x80	MMS-I	MMS-MS
h_{nom} Embedment depth	mm	30	35	50	50	65	30	45	45	55	45
$V_{Rd,S}$	kN	2,6	2,6	4,1	4,6	10,7	4,1	4,1	4,1	4,6	4,6
M_{Rd}	Nm			6,6	12,6	25,3	6,6	6,6	6,6	12,6	12,6

◇ Design shear load capacity include partial safety factor for material (γ_{ms}).

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TERMINOLOGY

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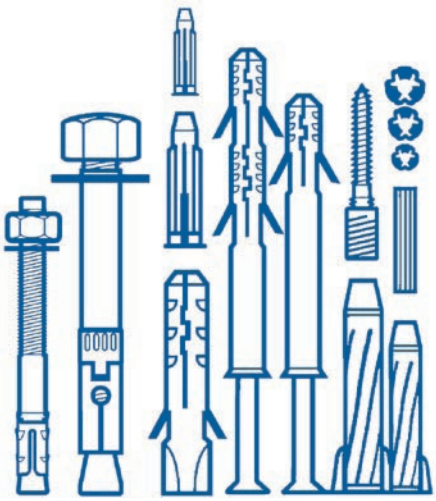
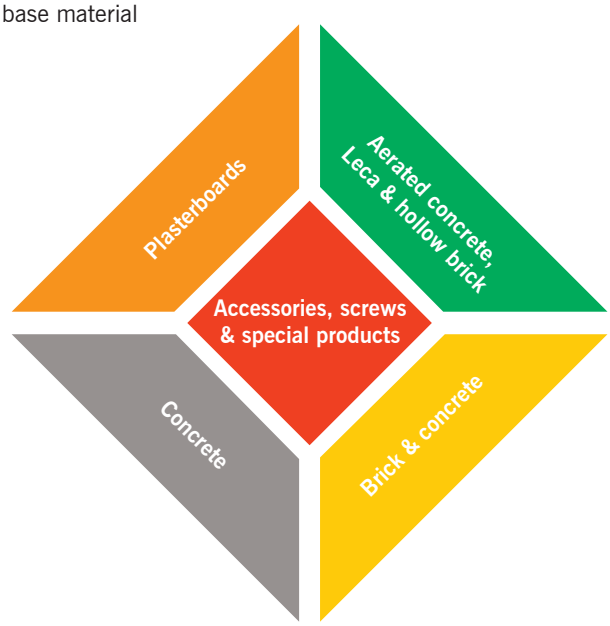


Expandet Screw Anchors A/S was established in 1955 and was pioneers in the field of fastener products for concrete and brickwork - being the first company to patent a fastener made in plastic. We are devoted to a constant development of our product range, which now covers the entire range of anchors and fasteners for both professional and DIY.

We have - with our base-material orientated colour code system - made it easy to choose the right anchor for the right base material



EXPANDET CALCULATION SOFTWARE

Expandet Calculation Software offers the possibility for design of single anchors and anchors groups in concrete according to ETAG 001, Annex C with our range of products that are defined according to CC Method. This includes our range of anchor systems approved for structural connections with CE-marking.

Code	Unit	Definition
d	Mx	Bolt diameter
d_{nom}	mm	Outside diameter of anchor
L	mm	Anchor length
L_{bolt}	mm	Bolt / screw length
L_{thread}	mm	Length of metric thread
L_{th}	mm	Available internal thread length
L_{sdmin}	mm	Minimum screw in depth
d_o	mm	Drill hole diameter
h_1	mm	Depth of drilled hole
h_{nom}	mm	Anchor embedment depth
h_{ef}	mm	Effective anchorage depth
h	mm	Thickness of member (concrete, brickwall etc.)
h_{min}	mm	Minimum thickness of member
h_f	mm	Minimum cavity behind wall
t_{fix}	mm	Thickness of fixture
$b_{fix1;2}$	mm	Witdt of fixture: b_{fix1} (direction 1) & b_{fix2} (direction 2)
T_{inst}	Nm	Required setting touque
S	mm	Spacing between anchors in an anchorgroup
S_1; S_2	mm	Spacing between anchors in an anchorgroup: S_1 (direction 1) & S_2 (direction 2)
$S_{cr, N}$	mm	Characteristic spacing for ensuring the transmission of the characteristic resistance of a single anchor in case of concrete cone failure
$S_{cr, sp}$	mm	Characteristic spacing for ensuring the transmission of the characteristic resistance of a single anchor in case of splitting failure
S_{rec}	mm	Recommended spacing (for full resistance)
S_{min}	mm	Minimum allowable spacing
S_{cr}	mm	Characteristic spacing at a defined edge distance
C	mm	Edge distance
C_1;C_2	mm	Edge distance fra anchor to edge: C_1 (direction 1) & C_2 (direction 2)
$C_{cr, N}$	mm	Characteristic edge distance for ensuring the transmission of the characteristic resistance of a single anchor in case of concrete cone failure
$C_{cr, sp}$	mm	Characteristic edge distance for ensuring the transmission of the characteristic resistance of a single anchor in case of splitting failure
C_{rec}	mm	Recommended edge distance (for full resistance)
C_{min}	mm	Minimum allowable edge distance
C_{cr}	mm	Characteristic edge distance at a difined spacing
N_{Rd}	kN	Design resistance, tension
$N_{Rd, s}$	kN	Design resistance, tension (steel failure)
$N_{Rd, p}$	kN	Design resistance, tension (pull out failure)
$N_{Rd, c}$	kN	Design resistance, tension (concrete cone failure)
$N_{Rd, sp}$	kN	Design resistance, tension (splitting failure)
V_{Rd}	kN	Design resistance, shear
$V_{Rd, s}$	kN	Design resistance, shear (steel failure)
$V_{Rd, c}$	kN	Design resistance, shear (concrete pryout failure, concrete edge failure)
F_{Rd}	kN	Design resistance, independent of load directioin
M_{Rd}	Nm	Design resistance, bending moment
γ_M		Partial safety factor for material
γ_{Ms}		Partial safety factor for material, steel failure
γ_{Mp}		Partial safety factor for material, pull out failure
γ_{Mc}		Partial safety factor for material, concrete cone failure
γ_{Msp}		Partial safety factor for material, splitting failure
N_{Sd}	kN	Design value of tensile actions acting on a single anchor or the fixture of an anchor group
V_{Sd}	kN	Design value of shear actions acting on a single anchor or the fixture of an anchor group
γ_f		Partial safety factor for actions
N_{rec}	kN	Maximum recommended tension load
V_{rec}	kN	Maximum recommended shear load
F_{rec}	kN	Maximum recommended load, independent of load direction
f_{ck}	N/mm²	Characteristic concrete compression strength messured on cylinders
$f_{ck, cube}$	N/mm²	Characteristic concrete compression strength messured on cubes
F_{yk}	N/mm²	Characteristic steel yield strength
F_{uk}	N/mm²	Characteristic steel ultimate tensile strength

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