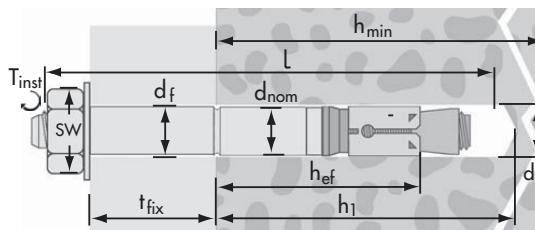
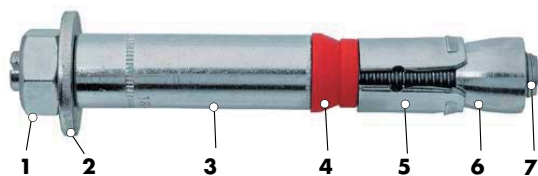


Stud head



No.	Name	Material	No.	Name	Material
1	Hexagon nut	Zinc plated steel	5	Expansion sleeve	Zinc plated steel
2	Washer	Zinc plated steel	6	Expansion cone	Zinc plated steel
3	Spacer sleeve	Zinc plated steel	7	Thread rod	Zinc plated steel 8.8
4	Collapsible sleeve	Plastic PE			

Building materials



C20/25
C50/60

Characteristics

Approvals

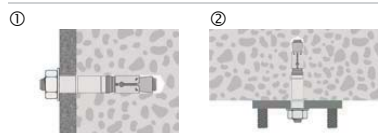


M8 - M16 F30 - F120

Qualities

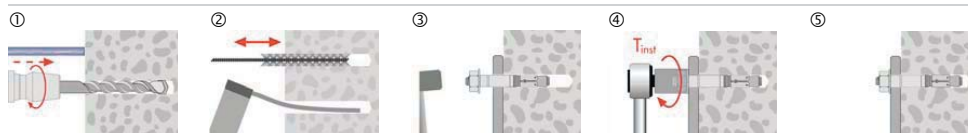
- For most concrete qualities C20/25 - C50/60.
- For loads from 2.0 up to 31.3 kN.
- Collapsible plastic sleeve allows the anchor to tighten down, closing small gaps against the base material.
- Controlled expansion for the heavy duty sector.
- Fastenings in solid natural stone without approval possible.
- Shock proof fastening in civil defence projects.

Applications



- ① Metal constructions on walls.
- ② Connection assemblies on ceilings.
- Approved for lightweight suspended ceilings according to DIN 18168 with 0.8 kN per plug.
- Large product range allows many different applications.
- For fixings in: metal constructions, machines, cables, pipings, scaffolds, railings, doors, stairs.

Installation



- ① Take drill hole- \varnothing and drill hole depth from the table.
- ② Clean the drill hole with a brush, then blow it out with a purging pump.
- ③ Position pre-drilled Building materials, drive the Heavy Duty Anchor into the material until the mark is reached.
- ④ Tighten the screw with a torque spanner to the pre-determined value T_{inst} .

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Anchor size		M6	M8	M10	M12	M16	
Approved tension load ¹⁾							
Concrete uncracked:							
N _{Zul}	- C20/25	6.3	7.9	11.9	13.9	19.8	
	- C25/30	7.1	8.8	13.1	15.4	21.9	
	- C30/37	7.7	9.7	14.5	16.9	24.2	
	- C40/50	7.7	11.2	16.8	19.6	28	
	- C50/60	7.7	12.3	18.5	21.5	30.8	
Concrete cracked:							
N _{Zul}	- C20/25	2	4.8	6.3	9.9	13.9	
	- C25/30	2.2	5.3	7.1	11	15.4	
	- C30/37	2.4	5.8	7.7	12.1	16.9	
	- C40/50	2.8	6.7	9	14	19.6	
	- C50/60	3.1	7.4	9.8	15.4	21.5	
Approved shear load							
Concrete cracked and uncracked:							
V _{Zul}	- C20/25	6.9	11.4	17.1	20.4	28.6	
	≥ C25/30	6.9	11.4	17.1	22.4	31.3	
M _{Zul}	Approved bending moment	Nm	7	17.1	34.2	60	152
c	Nom. distance to edge	mm	75	90	107	120	150
s	Nom. distance betw. anchors	mm	150	180	213	240	300
c _{min} /s	Min. distance to edge	mm	50/100	60/120	70/175	80/200	100/220
s _{min} /c	Min. distance betw. anchors	mm	50/80	60/100	70/120	80/160	100/180
h _{min}	Min. thickness of foundation	mm	100	120	140	160	200
h _{ef}	Effective anchorage depth	mm	50	60	71	80	100
SW	Spanner size	mm	10	13	17	19	24
T _{inst}	Torque at anchoring	Nm	15	30	50	80	120
h ₁	Drill hole depth	mm	65	80	95	105	130
d ₀	Drill hole-Ø in the building material	mm	10	12	15	18	24
d _{cut}	Max. drill cut-Ø	mm	10.45	12.5	15.5	18.5	24.55
d _f	Hole-Ø in the attached part	mm	12	14	17	20	26
l	Anchor length	mm	69 79 89 119 169	82 92 112 132 182	98 113 123 143 193	115 125 135 155 185	215 141 161 191 241
		mm	10	12	15	18	24
d _{nom}	Anchor-Ø	mm	10	12	15	18	24
t _{fix}	Assembling length usable	mm	0 10 30 50 100	0 10 30 50 100	0 15 25 45 95	0 10 20 40 70 100	0 20 50 100



Heavy Duty Anchor

1) Without influence of anchor and edge distance

Approved loads for fire resistance

		F30	F60	F90	F120	
N _{Zul}	30 Minutes	1.8	2.6	7	10	16
	60 Minutes	0.85	1.4	2.9	4.1	6.9
	90 Minutes	0.55	0.95	1.75	2.5	4.25
	120 Minutes	0.4	0.75	1.2	1.7	3

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Reduction factors for distance between anchors

Anchor size		M6	M8	M10	M12	M16
Anchor-Ø	mm	10	12	15	18	24
50	mm	0.67				
55	mm	0.68				
60	mm	0.70	0.67			
65	mm	0.72	0.68			
70	mm	0.73	0.69			
75	mm	0.75	0.71	0.68		
80	mm	0.77	0.72	0.69	0.67	
85	mm	0.78	0.74	0.70	0.68	
90	mm	0.80	0.75	0.71	0.69	
95	mm	0.82	0.76	0.72	0.70	
100	mm	0.83	0.78	0.73	0.71	0.67
105	mm	0.85	0.79	0.75	0.72	0.68
110	mm	0.87	0.81	0.76	0.73	0.68
115	mm	0.88	0.82	0.77	0.74	0.69
120	mm	0.90	0.83	0.78	0.75	0.70
125	mm	0.92	0.85	0.79	0.76	0.71
130	mm	0.93	0.86	0.81	0.77	0.72
135	mm	0.95	0.88	0.82	0.78	0.73
140	mm	0.97	0.89	0.83	0.79	0.73
145	mm	0.98	0.90	0.84	0.80	0.74
150	mm	1	0.92	0.85	0.81	0.75
160	mm		0.94	0.88	0.83	0.77
170	mm		0.97	0.90	0.85	0.78
180	mm		1	0.92	0.88	0.80
190	mm			0.95	0.90	0.82
200	mm			0.97	0.92	0.83
213	mm			1	0.94	0.86
220	mm				0.96	0.87
230	mm				0.98	0.88
240	mm				1	0.90
250	mm					0.92
260	mm					0.93
270	mm					0.95
280	mm					0.97
290	mm					0.98
300	mm					1
Distance to the edge c >	mm	80	100	120	160	180

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Reduction factors for close to edge distances

Anchor size		M6	M8	M10	M12	M16
Anchor-Ø		10	12	15	18	24
Distance to the edge c	50	0.83				
	55	0.87				
	60	0.90	0.83			
	65	0.93	0.86			
	71	0.97	0.89	0.83		
	75	1	0.92	0.85		
	80		0.94	0.88	0.83	
	85		0.97	0.90	0.85	
	90		1	0.92	0.88	
	95			0.95	0.90	
	100			0.97	0.92	0.83
	107			1	0.95	0.86
	110				0.96	0.87
	115				0.98	0.88
	120				1	0.90
	125					0.92
	130					0.93
	135					0.95
	140					0.97
145					0.98	
150					1	
Distance between anchors s >		100	120	175	200	220

Increase factors

If the concrete strength is higher than C20/25 the tension loads can be multiplied by following factors:

Concrete strength	Increase factor
C30/37	1.22
C40/50	1.41
C50/60	1.55