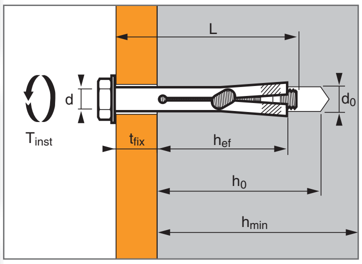
SPIT DYNABOLT

Zinc coated steel

Sleeve type expansion anchor



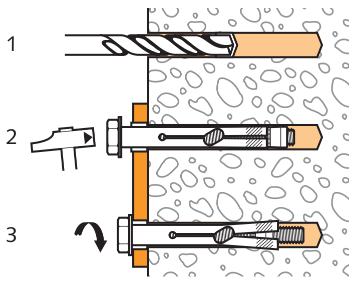
APPLICATION

- Wall plates,
- Porches,
- Signs,
- Angle rion, hand rails.

MATERIAL

- Bolt class 6.8

INSTALLATION



1 Drill a hole corresponding to the external diameter of the anchor with a depth equal to the minimum anchor depth plus the diameter of the anchor.

2 Position the anchor into the hole until it just touches the part to be fixed.

3 Tighten the anchor until the recommended torque is achieved.

Technical data

DYNABOLT HEX HEAD	Max. anchor depth (mm) h_{ef}	Max. thick of part to be fixed (mm) t_{fix}	Min thick of base material (mm) h_{min}	Ø thread (mm) d	Drilling depth (mm) h_0	Ø drill bit (mm) d_0	Total rod length (mm) L	Max. tighten torque (Nm) T_{inst}	Code
HB M6X45/8	26	8	55	M6	45	8	45	9	050252
HB M6X70/30	30	30	55	M6	45	8	70	9	050253
HB M6X95/56	30	56	55	M6	45	8	95	9	050254
HB M8X55/10	28	8	65	M8	50	10	55	20	050255
HB M8X80/35	34	35	65	M8	50	10	80	20	050256
HB M8X105/62	34	62	65	M8	50	10	105	20	050257
HB M10X75/18	44	18	80	M10	65	12	75	40	050259
HB M10X105/45	44	46	80	M10	65	12	105	40	050260
HB M12X110/49	44	49	95	M12	65	16	110	70	050262
DYNABOLT HOOK/EYE									
Hook	30	-	55	-	45	8	-	-	050272
Eye	30	-	55	-	45	8	-	-	050273

Anchor mechanical properties

Threaded part		**M6**	**M8**	**M10**	**M12**
f_{uk} (N/mm²)	Résistance à la traction min.	600	600	600	600
f_{yk} (N/mm²)	Limite d'élasticité	480	480	480	480
W_{el} (mm³)	Module d'inertie en flexion	12,7	31,2	62,3	109,2
$M^0_{Rk,s}$ (Nm)	Moment de flexion caractéristique	9,15	22,5	44,8	72
M (Nm)	Moment de flexion admissible	4,5	11,2	22,4	36,0

Spécial products - Recommended loads in kN

Dimensions	**Tensile concrete ≥ C20/25 (kN)**	**Eye/Hook Diameter (mm)**
Hook version	0,6	11
Eye version	0,6	8

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The loads specified on this page allow judging the product's performances, but cannot be used for the designing.
The data given in the pages "CC method" have to be applied.

Ultimate ($N_{Ru,m}$, $V_{Ru,m}$) / characteristic loads (N_{Rk}, V_{Rk}) in kN

Mean Ultimate loads are derived from test results in admissible service conditions, and characteristic loads are statistically determined.

TENSILE

Anchor size	M6	M8	M10	M12
Minimum anchorage depth				
h_{ef}	*26*	*28*	*35*	*39*
$N_{Ru,m}$	6,1	8,1	12,2	14,2
N_{Rk}	4,6	6,1	9,2	10,7
Maximum anchorage depth				
h_{ef}	*30*	*34*	*44*	*46*
$N_{Ru,m}$	7,6	10,8	17,2	18,2
N_{Rk}	5,7	8,1	12,9	13,7

SHEAR

Anchor size	M6	M8	M10	M12
$V_{Ru,m}$	7,3	13,2	20,9	30,4
V_{Rk}	6,1	11,0	17,4	25,3

Design Loads (N_{Rd}, V_{Rd}) for one anchor without edge or spacing influence in kN

$$N_{Rd} = \frac{N_{Rk}^{*}}{\gamma_{Mc}}$$

$$V_{Rd} = \frac{V_{Rk}^{*}}{\gamma_{Ms}}$$

*Derived from test results

TENSILE

Anchor size	M6	M8	M10	M12
Minimum anchorage depth				
h_{ef}	*26*	*28*	*35*	*39*
N_{Rd}	2,2	2,9	4,4	5,1
Maximum anchorage depth				
h_{ef}	*30*	*34*	*44*	*46*
N_{Rd}	2,7	3,9	6,1	6,5

$\gamma_{Mc} = 2,1$

SHEAR

Anchor size	M6	M8	M10	M12
V_{Rd}	3,8	6,9	10,9	15,8

$\gamma_{Ms} = 1,6$

Recommended loads (N_{rec}, V_{rec}) for one anchor without edge or spacing influence in kN

$$N_{Rec} = \frac{N_{Rk}^{*}}{\gamma_{M}.\gamma_{F}}$$

$$V_{Rec} = \frac{V_{Rk}^{*}}{\gamma_{M}.\gamma_{F}}$$

*Derived from test results

TENSILE

Anchor size	M6	M8	M10	M12
Minimum anchorage depth				
h_{ef}	*26*	*28*	*35*	*39*
N_{Rec}	1,6	2,1	3,1	3,6
Maximum anchorage depth				
h_{ef}	*30*	*34*	*44*	*46*
N_{Rec}	1,9	2,8	4,4	4,7

$\gamma_{Mc} = 2,1$

SHEAR

Anchor size	M6	M8	M10	M12
V_{Rec}	2,7	4,9	7,8	11,3

$\gamma_{Ms} = 1,6$

Recommended loads (N_{rec}, V_{rec}) in engineering clay bricks BP 400 (f_c > 40 N/mm²) in kN

TENSILE

Anchor size	M6	M8	M10	M12
h_{ef}	*30*	*34*	*44*	*46*
N_{Rec}	1,6	2,1	3,8	4,2

SHEAR

Anchor size	M6	M8	M10	M12
V_{Rec}	2,0	3,65	5,8	8,45

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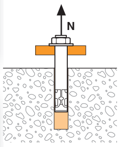
SPIT CC- Method

TENSILE in kN

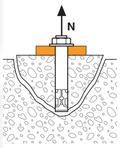


Pull-out resistance

$$N_{Rd,p} = N^{O}_{Rd,p} . f_b$$

$N^0_{Rd,p}$ Anchor size	Design pull-out resistance M6	M8	M10	M12
Minimum anchorage depth				
h_{ef}	*26*	*28*	*35*	*39*
$N^0_{Rd,p}$ (C20/25)	2,2	2,9	4,4	5,1
Maximum anchorage depth				
h_{ef}	*30*	*34*	*44*	*46*
$N^0_{Rd,p}$ (C20/25)	2,7	3,9	6,1	6,5

$\gamma_{Mc} = 2,1$

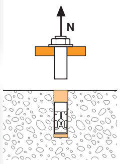


Concrete cone resistance

$$N_{Rd,c} = N^{O}_{Rd,c} . f_b . \Psi_s . \Psi_{c,N}$$

$N^0_{Rd,c}$ Anchor size	Design cone resistance M6	M8	M10	M12
Minimum anchorage depth				
h_{ef}	*26*	*28*	*35*	*39*
$N^0_{Rd,c}$ (C20/25)	3,2	3,6	5,0	5,8
Maximum anchorage depth				
h_{ef}	*30*	*34*	*44*	*46*
$N^0_{Rd,c}$ (C20/25)	3,9	4,8	7,0	7,5

$\gamma_{Mc} = 2,1$

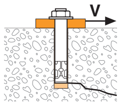


Steel resistance

$N_{Rd,s}$ Anchor size	Steel design tensile resistance M6	M8	M10	M12
$N_{Rd,s}$	6,3	11,5	18,1	26,4

$\gamma_{Ms} = 2$

SHEAR in kN

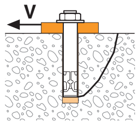


Concrete edge resistance

$$V_{Rd,c} = V^{O}_{Rd,c} . f_b . f_{\beta,V} . \Psi_{S-C,V}$$

$V^0_{Rd,c}$ Anchor size	Design concrete edge resistance at minimum edge distance (C_{min}) M6	M8	M10	M12
Minimum anchorage depth				
h_{ef}	*26*	*28*	*35*	*39*
C_{min}	45	50	60	70
S_{min}	85	100	115	170
$V^0_{Rd,c}$ (C20/25)	2,3	2,9	4,2	5,9
Maximum anchorage depth				
h_{ef}	*30*	*34*	*44*	*46*
C_{min}	50	60	75	100
S_{min}	95	120	145	200
$V^0_{Rd,c}$ (C20/25)	2,7	3,9	6,1	10,4

$\gamma_{Mc} = 1,5$

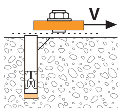


Pryout failure

$$V_{Rd,cp} = V^{0}_{Rd,cp} . f_b . \Psi_s . \Psi_{c,N}$$

$V^0_{Rd,cp}$ Dimensions	Design pryout resistance M6	M8	M10	M12
Minimum anchorage depth				
h_{ef}	*26*	*28*	*35*	*39*
$V^0_{Rd,cp}$ (C20/25)	4,5	5,0	7,0	8,2
Maximum anchorage depth				
h_{ef}	*30*	*34*	*44*	*46*
$V^0_{Rd,cp}$ (C20/25)	5,5	6,7	9,8	10,5

$\gamma_{Mcp} = 1,5$



Steel resistance

$V_{Rd,s}$ Anchor size	Steel design shear resistance M6	M8	M10	M12
$V_{Rd,s}$	3,8	6,9	10,9	15,8

$\gamma_{Ms} = 1,6$

$$N_{Rd} = \min(N_{Rd,p} ; N_{Rd,c} ; N_{Rd,s})$$

$$\beta_N = N_{Sd} / N_{Rd} \leq 1$$

$$V_{Rd} = \min(V_{Rd,c} ; V_{Rd,cp} ; V_{Rd,s})$$

$$\beta_V = V_{Sd} / V_{Rd} \leq 1$$

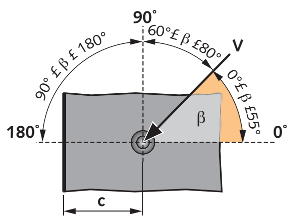
$$\beta_N + \beta_V \leq 1,2$$

f_B INFLUENCE OF CONCRETE

Concrete class	f_B
C20/25	1
C30/40	1,14
C40/60	1,26
C50/60	1,34

$f_{\beta,V}$ INFLUENCE OF SHEAR LOADING DIRECTION

Angle β [°]	$f_{\beta,V}$
0 to 55	1
60	1,1
70	1,2
80	1,5
90 to 180	2



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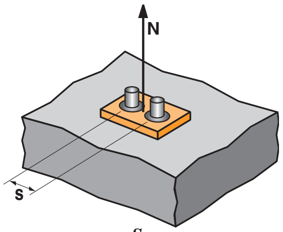
SPIT CC- Method

Ψ_s INFLUENCE OF SPACING FOR CONCRETE CONE RESISTANCE IN TENSILE LOAD



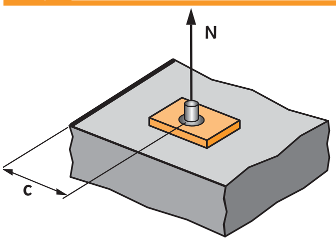
$$\Psi_S = 0,5 + \frac{s}{4.h_{ef}}$$

S_{min} < S < $S_{cr,N}$
$S_{cr,N}$ = 3.h_{ef}
Ψ_S must be used for each spacing influenced the anchors group.

SPACING S	Reduction factor Ψ_s Minimum anchorage depth M6	M8	M10	M12
85	1,00			
100		1,00		
115			1,00	
170				1,00

spacing S	Reduction factor Ψ_s Maximum anchorage depth M6	M8	M10	M12
95	1,00			
120		1,00		
145			1,00	
200				1,00

$\Psi_{c,N}$ INFLUENCE OF EDGE FOR CONCRETE CONE RESISTANCE IN TENSILE LOAD



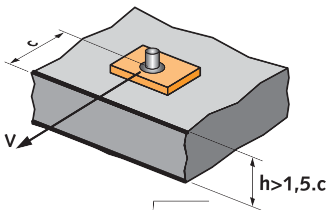
$$\Psi_{c,N} = 0,27 + 0,725.\frac{c}{h_{ef}}$$

C_{min} < C < $C_{cr,N}$
$C_{cr,N}$ = 1,5.h_{ef}
$\Psi_{c,N}$ must be used for each distance influenced the anchors group.

EDGE C	Reduction factor Ψ_s Minimum anchorage depth M6	M8	M10	M12
45	1,00			
50		1,00		
60			1,00	
70				1,00

EDGE C	Reduction factor Ψ_s Maximum anchorage depth M6	M8	M10	M12
50	1,00			
60		1,00		
75			1,00	
100				1,00

$\Psi_{s-c,V}$ INFLUENCE OF SPACING AND EDGE DISTANCE FOR CONCRETE EDGE RESISTANCE IN SHEAR LOAD

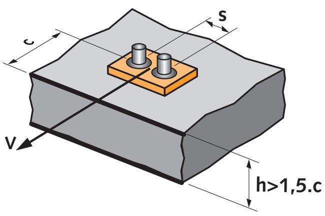


$$\Psi_{s-c,V} = \frac{c}{c_{min}}.\sqrt{\frac{c}{c_{min}}}$$

For single anchor fastening

Factor $\Psi_{s-c,V}$
Non-cracked concrete

$\frac{C}{C_{min}}$	1,0	1,2	1,4	1,6	1,8	2,0	2,2	2,4	2,6	2,8	3,0	3,2
$\Psi_{s-c,V}$	1,00	1,31	1,66	2,02	2,41	2,83	3,26	3,72	4,19	4,69	5,20	5,72

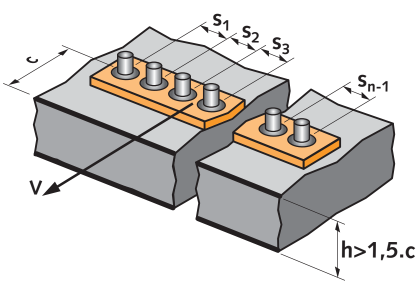


$$\Psi_{s-c,V} = \frac{3.c + s}{6.c_{min}}.\sqrt{\frac{c}{c_{min}}}$$

For 2 anchors fastening

Factor $\Psi_{s-c,V}$
Non-cracked concrete

$\frac{S}{C_{min}}$ \ $\frac{C}{C_{min}}$	1,0	1,2	1,4	1,6	1,8	2,0	2,2	2,4	2,6	2,8	3,0	3,2
1,0	0,67	0,84	1,03	1,22	1,43	1,65	1,88	2,12	2,36	2,62	2,89	3,16
1,5	0,75	0,93	1,12	1,33	1,54	1,77	2,00	2,25	2,50	2,76	3,03	3,31
2,0	0,83	1,02	1,22	1,43	1,65	1,89	2,12	2,38	2,63	2,90	3,18	3,46
2,5	0,92	1,11	1,32	1,54	1,77	2,00	2,25	2,50	2,77	3,04	3,32	3,61
3,0	1,00	1,20	1,42	1,64	1,88	2,12	2,37	2,63	2,90	3,18	3,46	3,76
3,5		1,30	1,52	1,75	1,99	2,24	2,50	2,76	3,04	3,32	3,61	3,91
4,0			1,62	1,86	2,10	2,36	2,62	2,89	3,17	3,46	3,75	4,05
4,5				1,96	2,21	2,47	2,74	3,02	3,31	3,60	3,90	4,20
5,0					2,33	2,59	2,87	3,15	3,44	3,74	4,04	4,35
5,5						2,71	2,99	3,28	3,71	4,02	4,33	4,65
6,0						2,83	3,11	3,41	3,71	4,02	4,33	4,65



For 3 anchors fastening and more

$$\Psi_{s-c,V} = \frac{3.c + s_1 + s_2 + s_3 + ... + s_{n-1}}{3.n.c_{min}}.\sqrt{\frac{c}{c_{min}}}$$