the right fixing

TECHNICAL INFORMATION

SPIT FIX

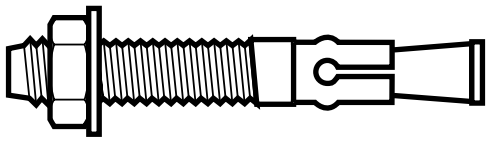
Hot dip galvanized

MAY 2002

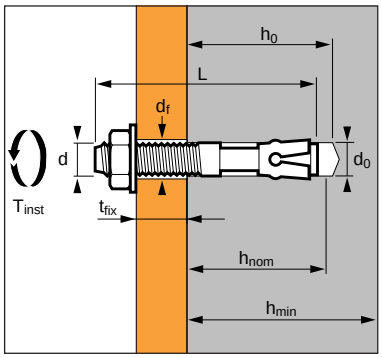
ASSOCIATION SOCOTEC-QUALITE
Membre adhérant n°65

SPIT FIX

Hot dip galvanized



HIGH PERFORMANCE SELF EXPANDING STUD ANCHOR




builders


nuclear


tunnels


carpenters joiners


steel fabricators


towns roads

APPLICATIONS

High risk applications

- Fixing a guard rails, safety barriers
- Fixing of elements for facades,
- Fixing steel framework and beams
- Fixing of scaffolding
- Fixing of lift guide rails

Moderated applications

- Fixing of hand rails
- Fixing various items and machines to the floor
- Fixing blinds, shutters, marble works

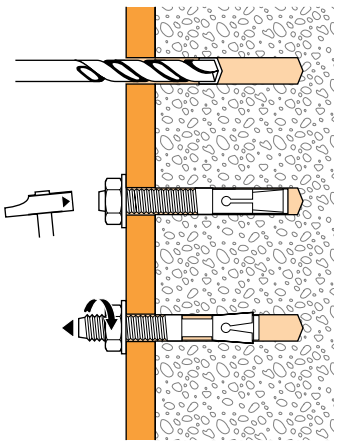
Technical data

Type	Ø thread (mm) d	Total anchor length (mm) L	Minimum anchorage				Maximum anchorage				Ø drill bit (mm) d_o	Ø clearance (mm) d_f	Tighten. torque (Nm) T_{inst}	Code
			Depth before expans. (mm) h_{nom}	Thick of part to be fixed (mm) t_{fix}	Drilling depth (mm) h_o	Min thick of base material (mm) h_{min}	Depth before expans. (mm) h_{nom}	Thick of part to be fixed (mm) t_{fix}	Drilling depth (mm) h_o	Min thick of base material (mm) h_{min}				
8-5/65	8	65	40	25	48	100	55	5	65	100	8	9	20	050310
8-30/90		90	40	50			55	30						050320
8-70/130		130	40	90			55	70						050330
10-10/75	10	75	50	25	60	100	60	10	70	100	10	12	45	050350
10-30/95		95	50	45			60	30						050360
10-50/120		120	50	70			60	50						050340
10-70/140		140	50	90			60	70						050370
12-10/100	12	100	60	40	72	100	80	10	90	120	12	14	65	050390
12-50/140		140	60	80			80	50						050400
12-90/180		180	60	120			80	90						050410
12-130/220		220	60	160			80	130						050420
16-10/125	16	125	75	45	91	110	100	10	115	150	16	18	120	050440
16-60/175		175	75	95			100	60						050450
20-25/160	20	160	95	60	115	150	120	25	140	180	20	22	180	050480
20-80/215		215	95	115			120	80						050490

Anchors mechanical properties

	M6	M8	M10	M12	M16	M20
f_{uk} (N/mm²) Minimum tensile strength	490	490	490	490	490	490
f_{yk} (N/mm²) Yield strength	345	345	345	345	345	345
Hot dip galvanizing : 45 µm mini - NF EN ISO 1460 - 1461 Salt spray > 350 hours						

Installation

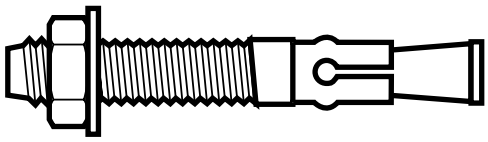


Drill a hole with a drill bit corresponding to the size of the SPIT FIX anchor to be installed in accordance with the above table.

Clean the hole by blowing (blow pump, compressed air, etc.)

Install the anchor in the hole and knock it in if necessary with a hammer only leaving two or three threads protruding beyond the part to fix.

Install the washer. Start screwing the nut onto the protruding threads. Hand tighten. Tighten with the wrench to obtain the required torque.



SPIT FIX
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Value of design resistance at the serviceability limit state (daN)



Dimensions	h_{nom} (mm)	TENSILE (N_{Rds})* High risk applications in non cracked concrete Moderate and no risk applications in cracked and non cracked concrete			OBLIQUE (F_{Rds})			SHEAR (V_{Rds})
		C20/25	C30/37	≥ C40/50	C20/25	C30/37	≥ C40/50	≥ C20/25
M8	40	235	280	330	215	235	255	275
	55	340	340	340	215	235	255	275
M10	50	360	425	515	335	365	400	435
	60	510	605	660	335	365	400	435
M12	60	520	620	755	485	530	580	630
	80	885	1000	1000	485	530	580	630
M16	75	685	810	960	735	815	900	1175
	100	1020	1140	1360	735	815	900	1175
M20	95	965	1175	1365	1075	1215	1330	1835
	120	1295	1575	1830	1075	1215	1330	1835

(*) For the **high risk applications in cracked concrete,** the design resistance must be devided by γ_{eq} = 1,4.

• N_{Rdu}, F_{Rdu}, V_{Rdu} : design resistance at the ultimate limit state
$R_{du} = R_{ds}$ x 1,4

Characteristic resistance (daN)



Dimensions	h_{nom} (mm)	TENSILE (N_{Rk})* High risk applications in non cracked concrete Moderate and no risk applications in cracked and non cracked concrete			OBLIQUE (F_{Rk})			SHEAR (V_{Rk})
		C20/25	C30/37	≥ C40/50	C20/25	C30/37	≥ C40/50	≥ C20/25
M8	40	705	840	990	645	705	765	825
	55	1020	1020	1020	645	705	765	825
M10	50	1080	1275	1545	1005	1095	1200	1305
	60	1530	1815	1980	1005	1095	1200	1305
M12	60	1560	1860	2265	1455	1590	1740	1890
	80	2655	3000	3000	1455	1590	1740	1890
M16	75	2055	2430	2880	2205	2445	2700	3525
	100	3060	3420	4080	2205	2445	2700	3525
M20	95	2895	3525	4095	3225	3645	3990	5505
	120	3885	4725	5490	3225	3645	3990	5505

(*) For the **high risk applications in cracked concrete,** the design resistance must be devided by γ_{eq} = 1,4.

Bending moment (Nm)

Dimensions	M8	M10	M12	M16	M20
W_{el} (mm^3) Elastic section modulus	31,2	62,3	109,2	277,5	541,0
M_{Rds} Bending moment at the serviceability limit state	7,7	15,4	26,9	68,4	133,3

M_{Rdu} : bending moment at the ultimate limit state
$M_{Rdu} = 1,4 \times M_{Rds}$

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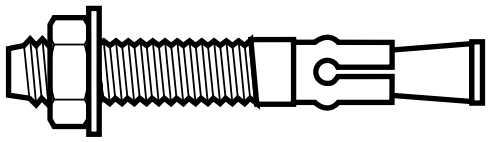
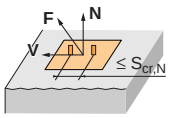
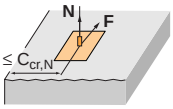
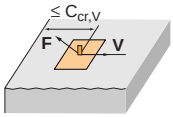


Reduction factor



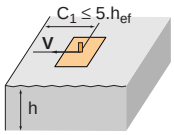




Dimensions	hnom	Distance S: Smin						Scr	Distance C (Tensile / Oblique not directed towards the edge): Cmin						Ccr,N	Distance C (Shear not directed towards the edge / Oblique directed towards the edge): Cmin						Ccr,V
M8	40	40	50	60	70	80	90	100		40	44	48	53	57	61	65		40	50	60	70	80	90	100
	55	55	68	81	95	108	122	135		55	60	65	71	77	82	88		40	50	60	70	80	90	100
M10	50	50	63	77	90	104	117	130		50	55	60	65	70	75	80		50	63	75	88	100	113	125
	60	65	80	98	115	133	149	166		65	70	76	83	89	96	102		50	63	75	88	100	113	125
M12	60	60	76	92	107,5	123	139	155		60	66	72	78	83	89	95		60	75	90	105	120	135	150
	80	85	109	133	155	177	200	223		85	95	103	112	120	128	137		60	75	90	105	120	135	150
M16	75	75	96	117	137,5	158	179	200		75	83	92	100	108	117	125		75	93	112	130	148	167	185
	100	105	132	160	188	217	245	274		100	114	126	137	148	160	171		75	93	112	130	148	167	185
M20	95	95	122,5	150	177,5	205	232,5	260		95	106	117	128	138	149	160		95	118	140	163	185	208	230
	120	125	163	199	236	272	309	345		125	141	155	169	184	198	212		95	118	140	163	185	208	230
Coefficient	ψs	**0,7**	**0,75**	**0,8**	**0,85**	**0,9**	**0,95**	**1**	ψc,N	**0,7**	**0,75**	**0,8**	**0,85**	**0,9**	**0,95**	**1**	ψc,V	**0,4**	**0,5**	**0,6**	**0,7**	**0,8**	**0,9**	**1**

■ Shear directed towards the edge in a concrete strength ≥ 25 Mpa

FIX	Distance C1 (mm)							
M8								
h ≥ 100		40	50	60	70	80	90	100
Coefficients ψc,v x ψep		**0,4**	**0,5**	**0,6**	**0,7**	**0,8**	**0,9**	**1**
M10								
h ≥ 100		50	63	75	88	100	113	125
Coefficients ψc,v x ψep		**0,4**	**0,5**	**0,6**	**0,7**	**0,8**	**0,9**	**1**
M12								
h ≥ 100		60	75	90	105	120	135	150
Coefficients ψc,v x ψep		**0,4**	**0,5**	**0,6**	**0,7**	**0,8**	**0,9**	**1**
M16								
h = 110	75	90	115	145	173	205	235	265
h = 120	75	84	108	135	160	192	218	245
h = 130	75	83	103	128	153	180	205	230
h = 150	75	82	96	112	135	160	185	210
h ≥ 170	75	82	96	112	130	148	167	185
Coefficients ψc,v x ψep	**0,35**	**0,4**	**0,5**	**0,6**	**0,7**	**0,8**	**0,9**	**1**
M20								
h = 150	95	105	135	167	200	233	270	305
h = 160	95	103	125	157	190	223	257	290
h = 180	95	100	118	145	175	200	228	255
h = 200	95	100	117	140	157	185	213	240
h ≥ 240	95	100	117	140	162	185	208	230
Coefficients ψc,v x ψep	**0,36**	**0,4**	**0,5**	**0,6**	**0,7**	**0,8**	**0,9**	**1**



Example :

For a SPIT FIX M16 anchor, subjected to shear load directed towards the edge in a class C20/25 concrete, located at 160 mm from an edge in a slab of thickness 120 mm, we have to apply the coefficients **ψc,v x ψep** *equal to 0,7 on the design resistance* V_{Rd}

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