

UNITEK®



Concrete self tapping bolt

Fastener application manual

混凝土自攻锚栓紧固件应用手册



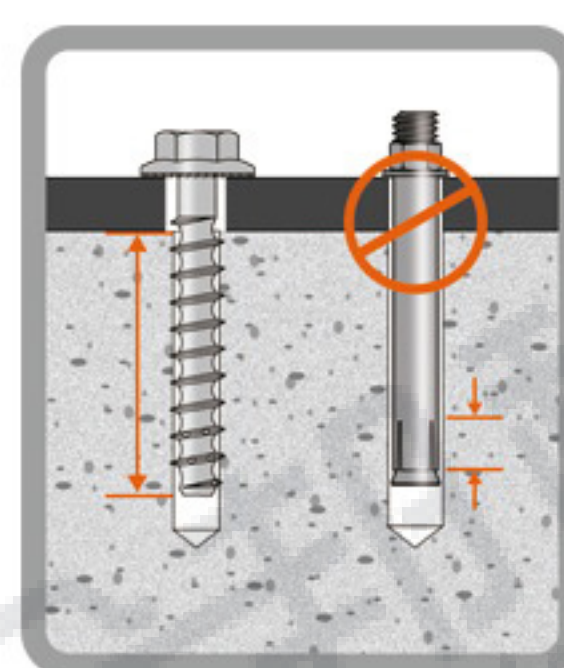
SUS410 / SUS410+SUS304

描述 Description

六角头混凝土自攻锚栓采用一体式设计，是具备重负荷的锚栓。具有安装简单，易于识别，可拆卸和耐振动等特点。此锚栓拥有多项独特的设计，适用于多种基材。传统的膨胀锚栓有外扩力，容易导致基材开裂。此锚栓克服了这些缺点，省时省力，且不需要复杂的安装步骤。

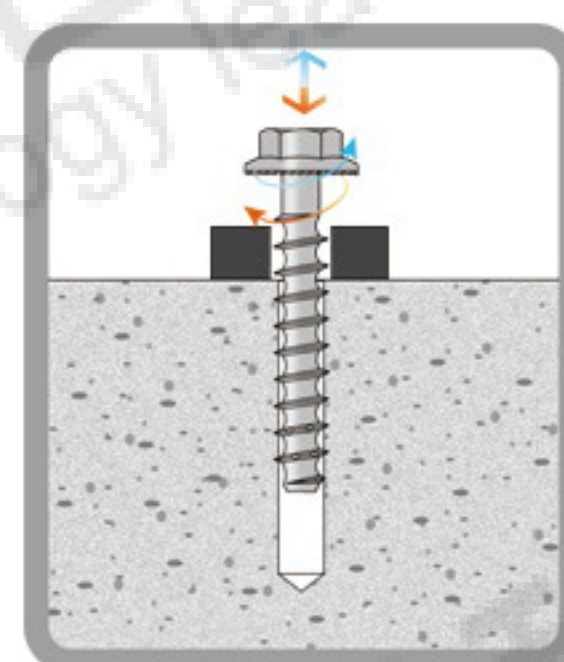
The concrete self tapping bolt adopt one type design, which is a heavy load anchor bolt. It has the features of simple installation, easy recognition, disassembly and vibration resistance. This bolt has a number of unique designs suitable for a variety of substrates. The traditional expansion bolt has the external expansion, which can easily cause the crack of the base material. This anchor bolt overcomes these shortcomings, saves time and labor, and also does not need complex installation steps.

优势 Advantage



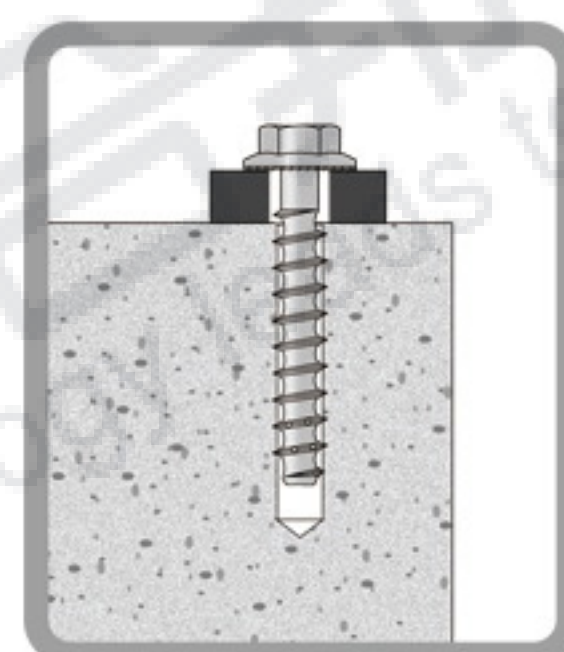
在整个埋深范围内咬紧基材，有效埋深更长

Bite the base material in the whole buried depth range, the effective buried depth is longer



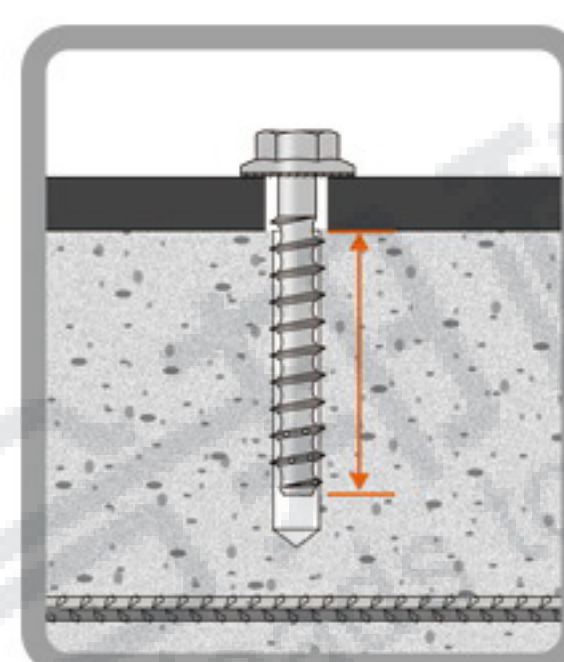
安装、拆除更容易

It is easier to install and dismantle



安装边距小，适用范围更广

Installation edge distance is small, applicable scope is wider



埋深浅

Buried depth



适用于混凝土等多种基材

Applicable to concrete and other substrates

基材 Base Material



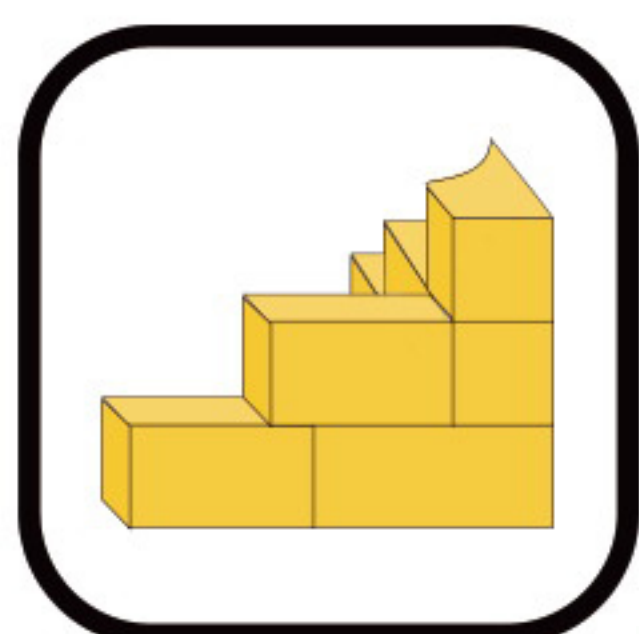
非开裂混凝土
Uncracked concrete



开裂混凝土
Cracked concrete



混凝土空心砖
Concrete hollow block



实心砖
Solid brick



浆液填充块
Grout filled block



空心浆液填充块
Hollow slurry filling block



轻骨料混凝土
Lightweight aggregate concrete

规格 Specification

头型 Head style	尺寸 Size	螺纹类型 Threads type	长度 Length(mm)	总紧固厚度(mm) Fastening thickness	钻孔直径(mm) Drilling diameter	表面处理 Surface treatment
 六角法兰 Hex flange  盘头 Pan head  沉头 Countersunk head	M6*35	 平牙 Flat thread	35	10	6	TECHNIK1000
	M6*50		50	10		
	M6*75		75	10		
	M6*100		100	15		
	M8*50	 高低牙 High-low thread	50	10	8	
	M8*70		70	15		
	M8*90		90	15		
	M8*100		100	15		
	M8*120	 弧底牙 Arc bottom thread	120	15	10	
	M10*75		75	15		
	M10*90		90	15		
	M10*100		100	15		
	M10*120	 弧底牙 Arc bottom thread	120	15	12	
	M10*150		150	15		
	M12*75		75	15		
	M12*100		100	15		
	M12*120	 高低牙 High-low thread	120	15	16	
	M12*150		150	15		
	M16*75		75	15		
	M16*100		100	15		
M16*120	120	15				
M16*150	150	15				
M16*200	200	15				

安装说明 Installation Instructions



特征 Characteristic	单位 Units	锚栓尺寸 Anchor bolt size									
		M6		M8		M10		M12		M16	
安装											
钻孔直径	mm	6		8		10		12		16	
最小被固定物孔径	mm	7.8		10.3		13.0		16.0		17.2	
有效埋深	mm	25	30	40	60	50	75	60	90	75	100
临界边距	mm	28	33	44	66	55	83	66	99	83	110
最小边距	mm	48									
最小间距	mm	72									
最小基材厚度	mm	38	45	60	90	75	113	90	135	113	150

安装工具

Installation Tools

锚栓尺寸 Anchor bolt size	M6	M8	M10	M12	M16
建议使用之钻头	Bosch Plus-1 M6	Bosch Plus-1 M8	Bosch Plus-1 M10	Bosch Plus-1 M12	Bosch Plus-1 M16
建议使用之电锤	Bosch GBH 4-32 DFR				
建议使用之套筒	SATA CR-V M6	SATA CR-V M8	SATA CR-V M10	SATA CR-V M12	SATA CR-V M16
建议使用之电动螺丝起子	180Nm-350Nm		550Nm-650Nm		



短套筒



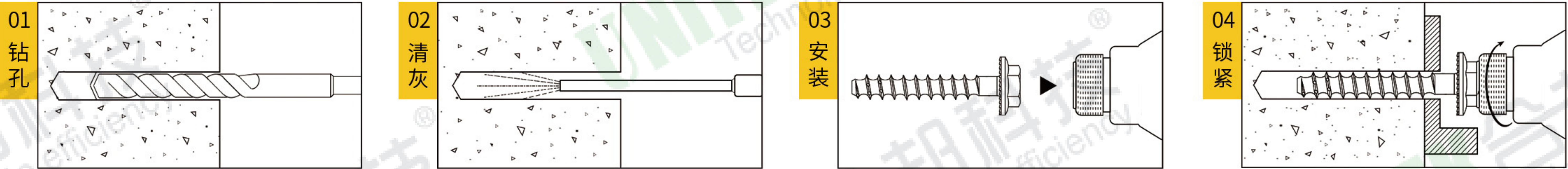
长套筒



电动螺丝起子

安装操作

Installation Procedure



机械性能

Mechanical Capacity

锚栓尺寸 Anchor bolt size	M6	M8	M10	M12	M16
应力断面积 [mm ²]	21	38.5	60	82.5	154
标称抗拉强度[N/mm ²]	1000	1000	1000	1000	1000
标称屈服强度[N/mm ²]	900	900	900	900	900
弹性断面模数（抗力矩）[mm ³]	13.5	33.5	66.5	106	269
建议使用弯矩[Nm]	12.3	30.2	60	90.5	242

最大安装扭矩

Maximum mounting torque(Nm)

基材 Base material	锚栓尺寸 Anchor bolt size				
	M6	M8	M10	M12	M16
15 MPa 混凝土	7	14	35	65	90
30 MPa 混凝土	14	34	45	70	90
40 MPa 混凝土	14	34	45	70	90
浆液填充块	14	15	20	45	70
实心红砖	14	15	30	70	90

拉力载荷 Tensile Load

规格 Size	钻孔直径 Drilling Diameter (mm)	埋深 Burial Depth (mm)	临界边距 Critical Margin (mm)	临界间距 Critical Spacing (mm)	拉力载荷 Tensile load					
					15MPa混凝土 15MPa Concrete		30MPa混凝土 30MPa Concrete		40MPa混凝土 40MPa Concrete	
					极限 (KN) Limitation	允许 (KN) Permission	极限 (KN) Limitation	允许 (KN) Permission	极限 (KN) Limitation	允许 (KN) Permission
M6	6	25	45	90	4.4	1.1	7.4	1.8	7.9	1.9
		30			7.2	1.8	9.1	2.2	9.5	2.3
M8	8	40	61	122	10.5	2.6	14.2	3.5	15.6	3.9
		60			17.7	4.4	22.0	5.5	29.1	7.2
M10	10	50	76	152	14.3	3.5	18.1	4.5	20.9	5.2
		75			22.1	5.5	28.5	7.1	35.3	8.8
		90			28.0	7.0	36.8	9.2	44.1	11.0
M12	12	60	102	203	21.4	5.3	17.7	6.9	31.7	7.9
		90			31.9	7.9	52.3	13.0	56.1	14.0
		110			32.2	8.0	58.4	14.6	61.6	15.4
M16	16	75	127	254	24.6	6.1	32.9	8.2	39.1	9.7
		100			39.0	9.7	52.2	13.0	60.6	15.1

注： 1、列出的允许载荷是根据4.0的安全系数
2、可能增加30%的允许载荷，用于规范允许的由于风或地震因素产生的短期载荷
3、最小基材厚度是埋深的1.5倍

Note: 1. The allowable load listed is based on the safety factor of 4.0
2. The allowable load may be increased by 30%, which is used to regulate the allowable short-term load caused by wind or earthquake
3. The minimum substrate thickness is 1.5 times of the buried depth

剪力载荷 Shear Load

规格 Size	钻孔直径 Drilling Diameter (mm)	埋深 Burial Depth (mm)	临界边距 Critical Margin (mm)	临界间距 Critical Spacing (mm)	剪力载荷 Shear load					
					15MPa混凝土 15MPa Concrete		30MPa混凝土 30MPa Concrete		40MPa混凝土 40MPa Concrete	
					极限 (KN) Limitation	允许 (KN) Permission	极限 (KN) Limitation	允许 (KN) Permission	极限 (KN) Limitation	允许 (KN) Permission
M6	6	25	68	90	4.2	1.0	8.4	2.1	9.9	2.4
		30			10.3	2.5	11.5	2.8	11.6	2.9
M8	8	40	92	122	14.2	3.5	18.3	4.5	•	5.0
		60			19.1	4.7	19.1	4.7	20.3	5.0
M10	10	50	114	152	19.8	4.9	25.6	6.4	•	7.4
		75			24.8	6.2	26.1	6.5	29.7	7.4
		90			29.3	7.3	29.9	7.4	30.6	7.6
M12	12	60	152	203	29.9	7.4	34.3	8.5	36.8	9.2
		90			34.7	8.6	37.7	9.4	37.7	9.4
		110			36.5	9.1	38.7	9.6	38.8	9.7
M16	16	75	191	254	40.6	10.1	51.2	12.8	57.6	14.4
		100			54.9	13.7	61.6	15.4	63.7	15.9

注： 1、列出的允许载荷是根据4.0的安全系数
2、可能增加30%的允许载荷，用于规范允许的由于风或地震因素产生的短期载荷
3、最小基材厚度是埋深的1.5倍

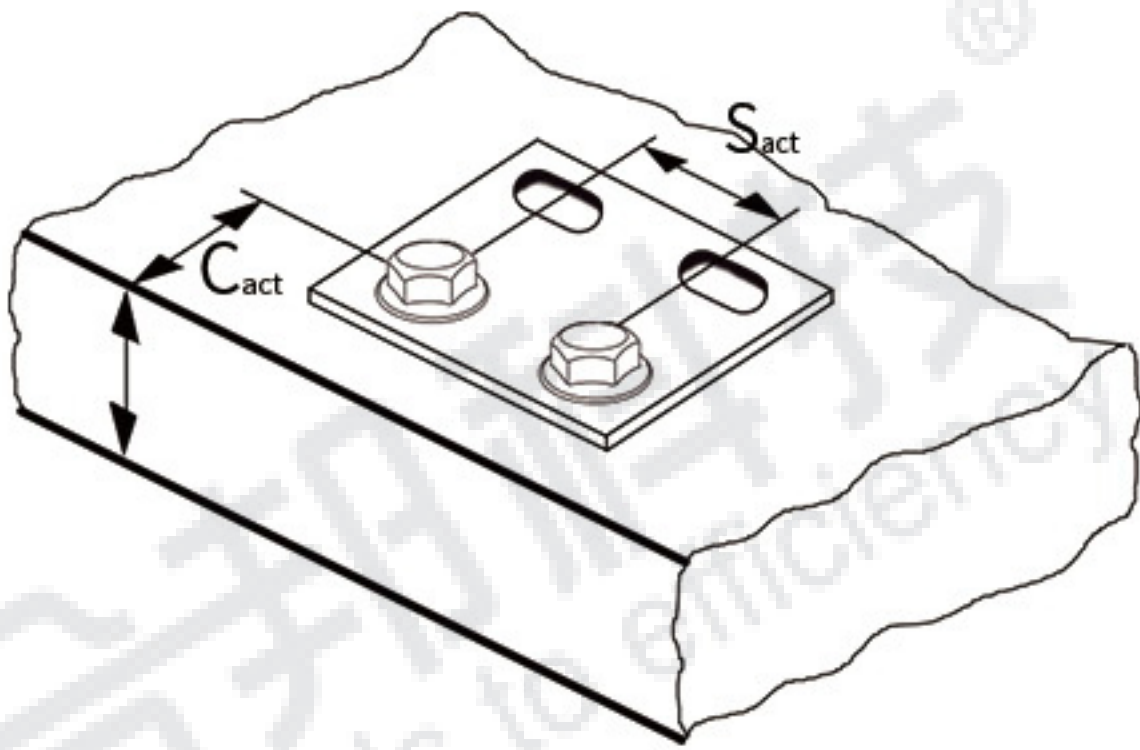
Note: 1. The allowable load listed is based on the safety factor of 4.0
2. The allowable load may be increased by 30%, which is used to regulate the allowable short-term load caused by wind or earthquake
3. The minimum substrate thickness is 1.5 times of the buried depth



边距对拉力的影响

Effect Of Margin On Tension

边距 C_{act} (mm)	直径	M6	M8	M10	M12	M16
	C_{cr}	48	64	80	96	128
	C_{min}	18	24	30	36	48
	f_{cmin}	0.70	0.70	0.70	0.70	0.70
18		0.70				
24		0.76	0.70			
30		0.82	0.75	0.70		
36		0.88	0.79	0.74	0.70	
42		0.94	0.84	0.77	0.73	
48		1.00	0.88	0.81	0.76	0.70
54			0.93	0.84	0.79	0.72
60			0.97	0.88	0.82	0.75
66			1.00	0.92	0.85	0.77
72				0.95	0.88	0.79
78				0.99	0.92	0.81
84				1.00	0.95	0.84
90					0.98	0.86
96					1.00	0.88
102						0.90
108						0.93
114						0.95
120						0.97
126						0.99
132						1.00



- 说明:
- 1、E=埋深
 - 2、 C_{act} =实际边距
 - 3、 C_{cr} =百分百承载力边距
 - 4、 C_{min} =承载力折减后最小边距
 - 5、 f_c =实际边距允许载荷百分比
 - 6、 f_{ccr} =临界边距允许载荷百分比
 $f_{ccr}=1.00$
 - 7、 f_{cmin} =最小边距时承载力折减系数
 - 8、 $f_c=f_{cmin}+[(1-f_{cmin})(C_{act}-C_{min})/(C_{cr}-C_{min})]$

边距对剪力的影响

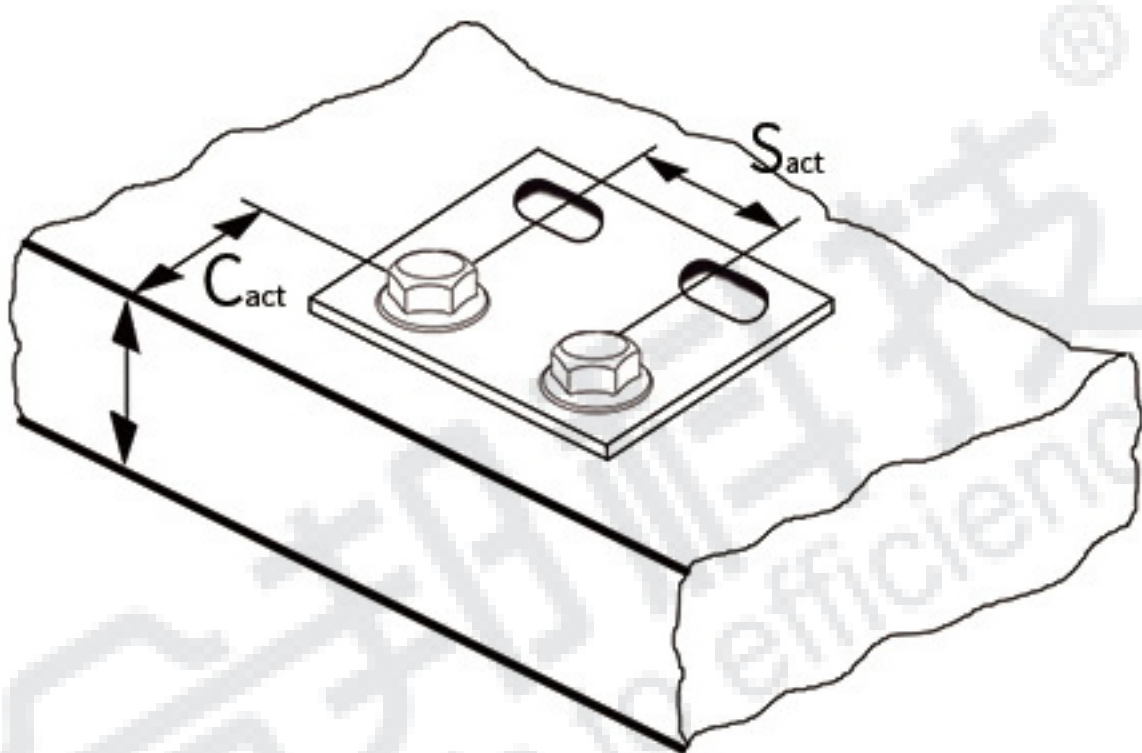
Effect Of Margin On Shear

边距 C_{act} (mm)	直径	M6	M8	M10	M12	M16
	C_{cr}	72	96	120	144	192
	C_{min}	18	24	30	36	48
	f_{cmin}	0.15	0.15	0.15	0.15	0.15
18		0.15				
27		0.29	0.19			
36		0.43	0.29	0.21	0.15	
45		0.58	0.40	0.29	0.22	
54		0.72	0.50	0.38	0.29	0.19
63		0.86	0.61	0.46	0.36	0.24
72		1.00	0.72	0.55	0.43	0.29
81			0.82	0.63	0.50	0.34
90			0.93	0.72	0.58	0.40
99			1.00	0.80	0.65	0.45
108				0.89	0.72	0.50
117				0.97	0.79	0.56
126				1.00	0.86	0.61
135					0.93	0.66
144					1.00	0.72
153						0.77
162						0.82
171						0.88
180						0.93
189						0.98
198						1.00

间距对拉力的影响

Effect Of Spacing On Tension

间距 S_{act} (mm)	直径	M6	M8	M10	M12	M16
	S_{cr}	72	96	120	144	192
	S_{min}	24	32	40	48	64
	f_{smin}	0.50	0.50	0.50	0.50	0.50
24		0.50				
32		0.58	0.50			
40		0.67	0.56	0.50		
48		0.75	0.63	0.55	0.50	
56		0.83	0.69	0.6	0.54	
64		0.92	0.75	0.65	0.58	0.50
72		1.00	0.81	0.70	0.63	0.53
80			0.88	0.75	0.67	0.56
88			0.94	0.80	0.71	0.59
96			1.00	0.85	0.75	0.63
104				0.90	0.79	0.66
112				0.95	0.83	0.69
120				1.00	0.88	0.72
128					0.92	0.75
136					0.96	0.78
144					1.00	0.81
152						0.84
160						0.88
168						0.91
176						0.94
184						0.97
192						1.00



- 说明：
- 1、E=埋深
 - 2、 S_{act} =实际间距
 - 3、 S_{cr} =百分百承载力间距
 - 4、 S_{min} =承载力折减后最小间距
 - 5、 f_s =实际间距允许载荷百分比
 - 6、 f_{scr} =临界间距允许载荷百分比
 $f_{scr}=1.00$
 - 7、 f_{smin} =最小间距时承载力折减系数
 - 8、 $f_s=f_{smin}+[(1-f_{smin})(S_{act}-S_{min})/(S_{cr}-S_{min})]$

间距对剪力的影响

Effect Of Spacing On Shear

间距 S_{act} (mm)	直径	M6	M8	M10	M12	M16
	S_{cr}	72	96	120	144	192
	S_{min}	24	32	40	48	64
	f_{smin}	0.75	0.75	0.75	0.75	0.75
24		0.75				
32		0.79	0.75			
40		0.83	0.78	0.75		
48		0.88	0.81	0.78	0.75	
56		0.92	0.84	0.8	0.77	
64		0.96	0.88	0.83	0.79	0.75
72		1.00	0.91	0.85	0.81	0.77
80			0.94	0.88	0.83	0.78
88			0.97	0.90	0.85	0.80
96			1.00	0.93	0.88	0.81
104				0.95	0.90	0.83
112				0.98	0.92	0.84
120				1.00	0.94	0.86
128					0.96	0.88
136					0.98	0.89
144					1.00	0.91
152						0.92
160						0.94
168						0.95
176						0.97
184						0.98
192						1.00



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