

基本資訊 Basic Information

SUNWAY SW-E8 Stainless Steel Expansion Bolt 新和不鏽鋼拉爆螺絲(SW-E8)

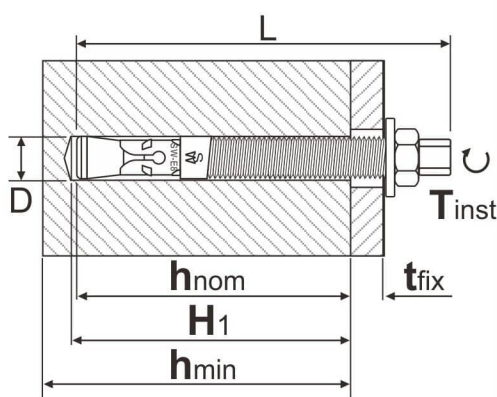


Material: Stainless steel grade A4/316

MaterialLab



Basic Installation Parameters



Item	Series	SW-E8	
		x75	x100
h_{min}	(mm) Min. Concrete Thickness	100	
D	(mm) Drill Hole Diameter	8	
H₁	(mm) Recommended Drill Hole Depth	59	
h_{nom}	(mm) Depth before expand	55	
t_{fix}	(mm) Max. Thickness of Installation Material	10	35
L	(mm) Anchor Total Length	75	100
T_{inst}	(Nm) Recommended Torque	20	

Base Material

Concrete C20/25 to C50/60, cracked & non-cracked

Characteristics

High corrosion resistance

Highest quality mechanical fixing

Small edge distance and spacing between bolts

Excellent tensile and shear loading resistance

Applications

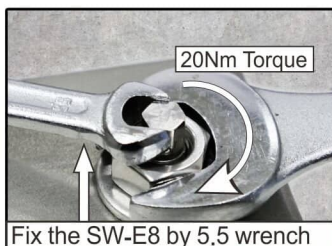
- | | |
|---------------------------|---------------|
| -Structural Steel Channel | -Facade |
| -Mechanical Equipment | -Handrail |
| -Barriers | -Curtain Wall |



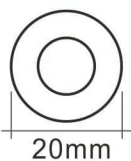
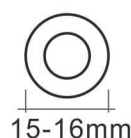
Product Features

Hexagon Head Design

六角頭設計



Black Mark Line Design
黑線標記設計



Thickness: 1.0-1.5mm
The general size of washer accompanied with anchor bolt selling in the market.

Thickness: 2.0mm
The size of SUNWAY's washer is larger and thicker, providing stronger friction.

新和的不鏽鋼介子尺寸較大，提供更強抓著力

July 2020

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Assumptions of the following data:

- The bolt is installed correctly in concrete equivalent to grade C20/25
- Single anchor without any influences by edge distance and spacing between bolts
- Min. concrete thickness equal to 100 mm

Basic Loading Data and Setting

Sunway Expansion Bolt SW-E		SW-E8
Bolt size		M8
Characteristic Resistance		
For cracked and non-cracked concrete		
Tensile	N_{RK} [kN]	6,0
Shear	V_{RK} [kN]	13,2

Recommended Loads (included the safety factor $\gamma = 3$ regulated in HK)		
For cracked and non-cracked concrete		
Tensile	N_{rec} [kN]	2,0
Shear	V_{rec} [kN]	4,4

Basic Setting Parameters		
Minimum edge distance	c_{min} [mm]	60
Minimum spacing	s_{min} [mm]	35
Minimum concrete thickness	h_{min} [mm]	100

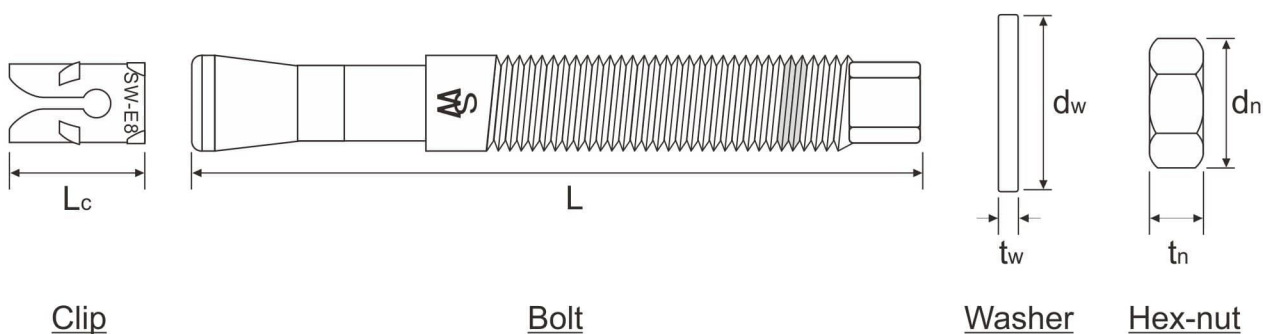
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Material and Dimensions

Sunway Expansion Bolt SW-E		SW-E8
Bolt size		M8
Material Mechanical Properties		
Stainless Steel Grade A4 (S.S. 316)		
Nominal characteristic steel ultimate strength	f_{uk} [N/mm ²]	735
Yield strength	f_{yk} [N/mm ²]	630
Stressed cross-section	A_s [mm]	36,6
Elastic section modulus	W_{el} [mm ³]	31,2
Characteristic bending resistance	$M^0_{Rk,s}$ [Nm]	27,5



Sunway Expansion Bolt SW-E		SW-E8
Bolt size		M8
Assemblies Dimensions		
Overall length	L [mm]	75/100
Length of clip	L_c [mm]	14,5
Outer diameter of washer	d_w [mm]	20
Thickness of washer	t_w [mm]	2,0
Wrench size of hex-nut	d_n [mm]	13
Thickness of hex-nut	t_n [mm]	6,3

Specifications of Intended Use

Anchorage subject to:

- Static and quasi-static loads.

Base materials:

- Reinforced or unreinforced normal weight acc. to EN 206-1:2000-12.
- Strength classes C20/25 – C50/60, Cracked and non-cracked concrete.

Use conditions (Environmental conditions):

- Structures subject to dry internal conditions.

Design:

- Anchorage are designed under the responsibility of an engineer experienced in anchorages and concrete work.
- Verifiable calculation notes and drawings are prepared taking account of the loads to be anchored. The position of the anchor is indicated on the design drawings (e.g. position of the anchor relative to reinforcement or to supports, etc.).
- Anchorage under static or quasi-static actions are designed in accordance with ETAG 001, Annex C.

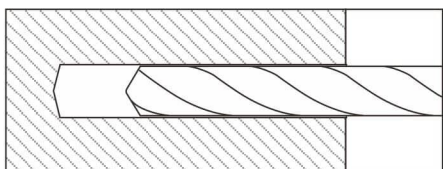
Installation:

- Hole drilling by hammer drilling only.
- Anchor installation carried out by appropriately qualified personal and under the supervision of the person responsible for technical matters of the site.

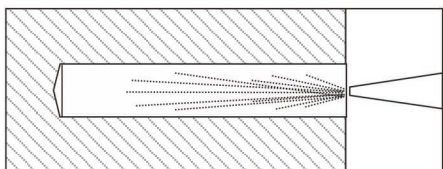
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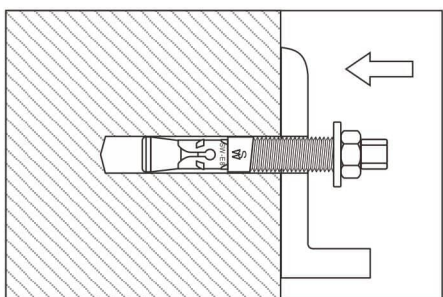
Installation Procedure and Instructions:



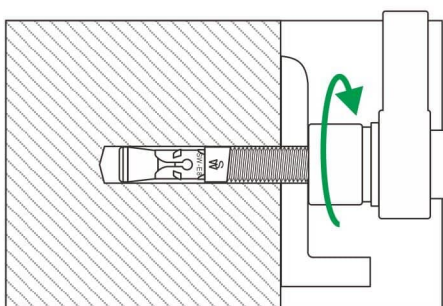
Step 1: Drill the hole with a hammer drill
(the drill hole should be perpendicular to
the surface of concrete)



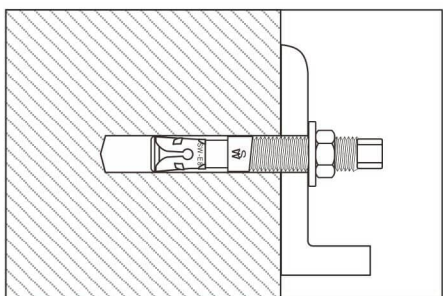
Step 2: Clean the drill hole



Step 3: Hammer in the expansion bolt
(pay attention to the defined setting depth)



Step 4: Apply the required installation torque T_{inst}
by using a torque wrench. In case of self-rotation,
the bolt should be fixed by another smaller size
torque wrench



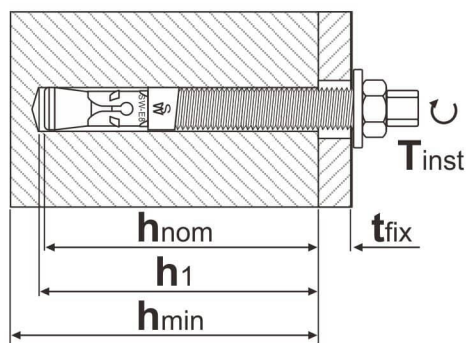
Step 5: After installation

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Installation and Setting Parameters



Sunway Expansion Bolt SW-E		SW-E8
Bolt size		M8
Installation Parameters		
Nominal drill hole diameter	d_0 [mm]	8
Maximum cutting diameter of drill bit	$d_{cut,max}$ [mm]	8,45
Recommended drill hole depth	h_1 [mm]	59
Depth before expand	h_{nom} [mm]	55
Recommended embedment depth	h_{ef} [mm]	47
Diameter of clearance hole for in-place installation	d_f [mm]	9
Recommended torque	T_{inst} [Nm]	20
Min. concrete thickness	h_{min} [mm]	100

Bolt size		M8
Setting Parameters		
Minimum edge distance	C_{min} [mm]	60
Minimum spacing	s_{min} [mm]	35
Critical spacing for splitting failure and concrete cone failure	$s_{cr,sp}$ [mm]	160
	$s_{cr,N}$ [mm]	160
Critical edge distance for splitting failure and concrete cone failure	$C_{cr,sp}$ [mm]	80
	$C_{cr,N}$ [mm]	80

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**SUNWAY SW-E8 Stainless Steel Expansion Bolt
新和不鏽鋼拉爆螺絲(SW-E8)**
Basic Design Tensile Resistance

Sunway Expansion Bolt SW-E		SW-E8
Bolt size		M8
For steel failure		
Characteristic resistance	$N_{Rk,s}$ [kN]	16,30
Partial safety factor	γ_{Ms}	1,40
For pull-out failure		
Characteristic resistance (For C20/25 cracked and non-cracked concrete)	$N_{Rk,p}$ [kN]	6,00
Installation safety factor	γ_{inst}	1,40
Increasing factors for $N_{Rk,p}$ – C25/30	ϕ_c	1,07
Increasing factors for $N_{Rk,p}$ – C30/37	ϕ_c	1,14
Increasing factors for $N_{Rk,p}$ – C35/45	ϕ_c	1,20
Increasing factors for $N_{Rk,p}$ – C40/50	ϕ_c	1,25
Increasing factors for $N_{Rk,p}$ – C45/55	ϕ_c	1,30
Increasing factors for $N_{Rk,p}$ – C50/60	ϕ_c	1,34
For concrete cone failure		
Recommended embedment depth	h_{ef} [mm]	47
Factor for cracked concrete	k_{cr}	7,2
Factor for non-cracked concrete	k_{ucr}	10,1
Installation safety factor	γ_{inst}	1,40
Spacing	$s_{cr,N}$ [mm]	160
Edge distance	$c_{cr,N}$ [mm]	80
For concrete splitting failure		
Spacing	$s_{cr,sp}$ [mm]	160
Edge distance	$c_{cr,sp}$ [mm]	80
Installation safety factor	γ_{inst}	1,40

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SUNWAY SW-E8 Stainless Steel Expansion Bolt 新和不鏽鋼拉爆螺絲(SW-E8)

Basic Design Shear Resistance

Sunway Expansion Bolt SW-E		SW-E8
Bolt size		M8
For steel failure		
Characteristic resistance without lever arm	$V_{Rk,s}$ [kN]	13,2
Factor for group fasteners	k_7	1,0
Characteristic resistance with lever arm	$M_{Rk,s}$ [Nm]	27,5
Partial safety factor	γ_{Ms}	1,25
For concrete pry-put failure		
Factor for pry-out failure	k_8	1,0
For concrete edge failure		
Factor for cracked concrete	k_{cr}	1,7
Factor for non-cracked concrete	k_{ucr}	2,4
Effective length of anchor under shear load	l_f [mm]	47
Diameter of anchor	d_{nom} [mm]	8,0

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Special Features

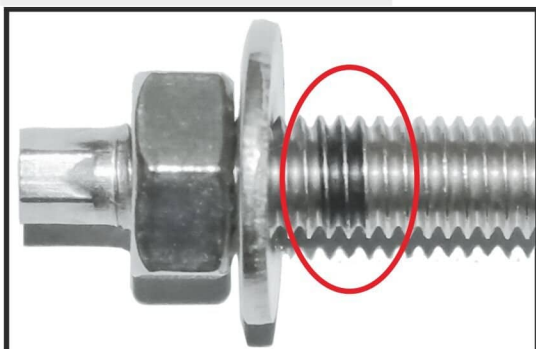


SW-E8 Stainless Steel Expansion Bolt



Hexagon Head Design
六角頭設計

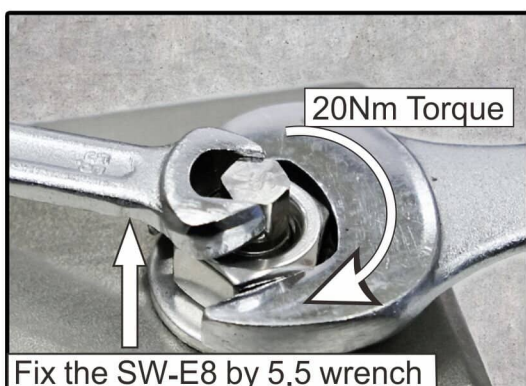
Black Mark Line Design
黑線標記設計



To ensure the expansion bolt is installed with an appropriate embedment depth, workman can hammer the bolt into the concrete until the black mark line is reached.

工人施工時，可把螺絲錘入至黑線標記位置以達致合適的嵌入深度。

Hexagon Head Design Application
六角頭設計應用



During the process of tightening, the expansion bolt may have risk of selfrotation problem if the quality of drill hole is not stable. Therefore, resistance of the bolt will be influenced. 在收緊拉爆螺絲時，如鑽孔質素不穩定，螺絲有機會出現自轉情況，影響其表現。

The design of hexagon head design can effectively assist to fix the bolt while tightening, problem of self-rotation will be avoided. 六角頭設計能在收緊時有助穩定螺絲，避免自轉情況。