

# The Australian designed tie system made to make scaffold safer



**scaffSAFE**

PRODUCT BROCHURE

---

[www.scaffsafeinternational.com](http://www.scaffsafeinternational.com)



scaffSAFE is a patented, proprietary, anti-tampering, innovative and Australian designed tie system that removes the likelihood of dismantling scaffolding and couplers from fixed structures.

#### **SCAFFSAFE DELIVERS:**

- Safer operations
- Minimised site risk and liability
- Accident prevention
- Reduced costs and complexity of safety measures
- Traceability of Products and Tools

The installation of the scaffSAFE System keeps the principal contractor and scaffolder in control during the scaffolding erection and dismantling process as it protects structures against unauthorised component adjustment or removal.

An engineered control system, the components have been designed to prevent unauthorized workers from removing and loosening scaffold ties. This substantially decreases the risk of scaffold incidents, thereby eliminating site disruptions and the risk of serious injuries or fatalities.

**scaffSAFE ensures a safer working environment for all employees on a scaffolding site.**





## BACKGROUND

The designers of scaffSAFE have an accumulative 52 years of experience in the scaffolding industry. The team developed the patented, anti-tampering system in response to site incidents occurring in which workers were tampering with ties and creating dangerous workplace situations.

On a traditional scaffold setup, scaffolding ties are held with a pivot coupler and secured with a regular hexagonal nut. This fixing point is readily accessible to all trades and can be loosened/removed with a variety of tools.

It is well known façade tradesman have been known to remove scaffold ties and hop-ups without approval. This action undermines the entire framework of the scaffold, compromises the safety of the workers in the site, as well as those working on the scaffold themselves.

From such incidents, it became evident that better control measures were required to make scaffolding safer.



## TOOL DETAILS AND APPLICATIONS



The scaffSAFE tie system features couplers and anchor screws that can only be installed or removed with the custom designed spanner.



The scaffSAFE couplers are compatible with typical scaffold tubes and hot dip galvanised to guarantee lifelong usage and deter rust prevention.



The scaffSAFE spanner (tool) is uniquely designed to lock onto the coupler nut and head of the anchor screws. Each spanner issued has a unique identification number and the name of the business to which it belongs laser engraved. This feature allows tool traceability via our white label cloud tracking application.



A plastic orange safety cap covers the coupler nut or anchor screw head after installation. The cap has a warning label to prevent unauthorised workers from using conventional tools to unwind the ties.

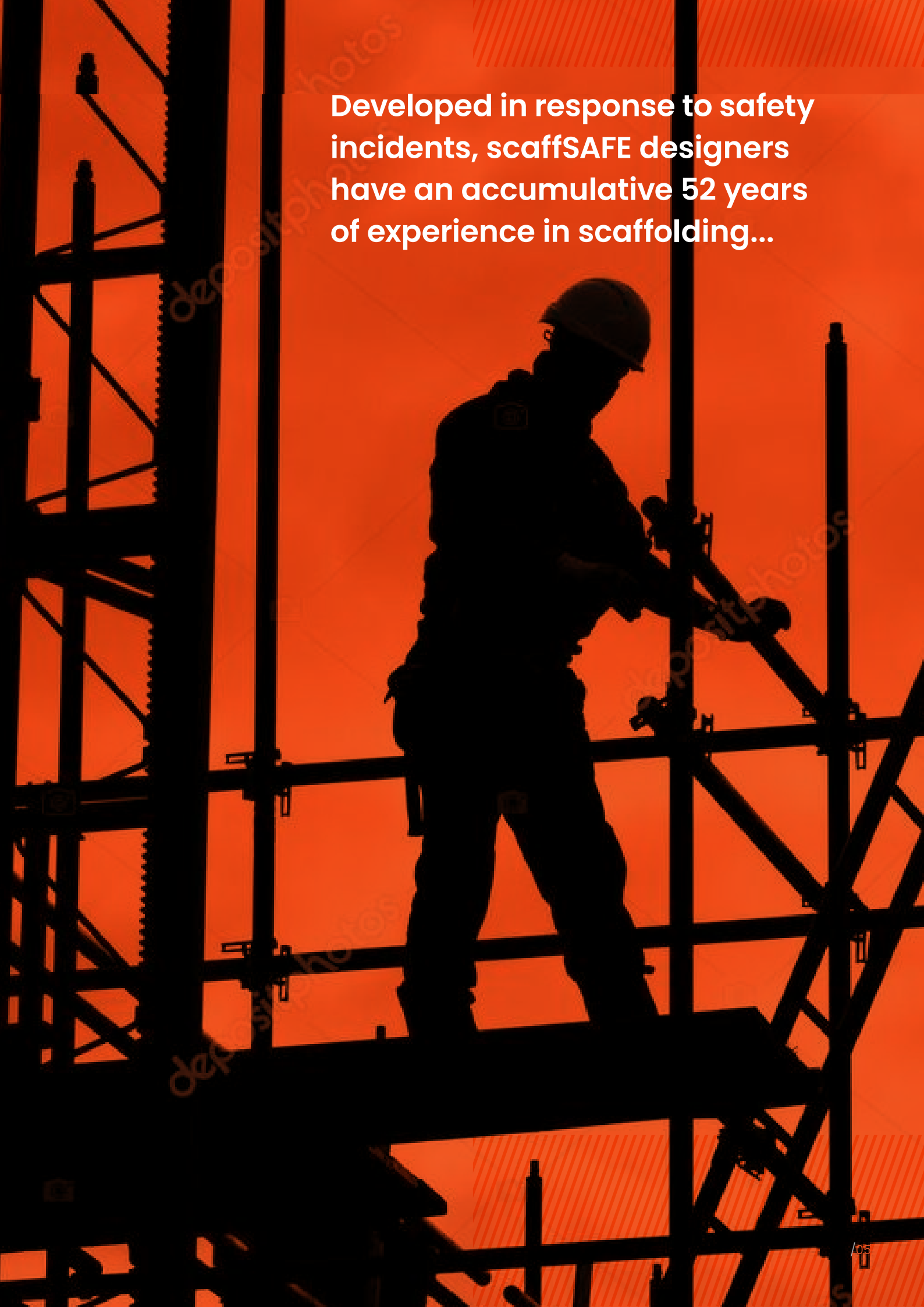


Finished in bright orange, the scaffSAFE items are easily visible to the workers within the site.



Each toolbox kit issued includes the spanner, a socket to use on impact wrench, an identification plaque and a leather frog for the tool belt.

Developed in response to safety incidents, scaffSAFE designers have an accumulative 52 years of experience in scaffolding...





## SCAFFSAFE FITTINGS



**scaffSAFE Double Coupler - Galvanised**  
Product Code: SSI-DC  
Weight: 1.25 kg



**scaffSAFE Swivel Coupler - Galvanised**  
Product Code: SSI-SC  
Weight: 1.4 kg



**scaffSAFE Wall Tie Bracket One Coupler - Galvanised**  
Product Code: SSI-WTB  
Weight: 3.15 kg



**scaffSAFE Wall Tie Brackets 2 Couplers - Galvanised**  
Product Code: SSI-WTB2C  
Weight: 4.1 kg

## SCAFFSAFE TOOLS & ACCESSORIES



**scaffSAFE Tool Kit Box**  
Product Code: SSI-TK  
Weight: 0.99 kg



**scaffSAFE Spanner - Chrome Plated**  
Product Code: SSI-Spanner  
Weight: 0.56 kg



**scaffSAFE Socket Chrome Plated - 1/2 Drive**  
Product Code: SSI-SKT  
Weight: 0.24 kg



**scaffSAFE Frog for Spanner**  
Product Code: SSI-FSP  
Weight: 0.91 kg



**scaffSAFE Safety Cap - Orange Color**  
Product Code: SSI-SFC  
Weight: 0.05 kg



**scaffSAFE Anchor Bolts 12mm x 75mm - Electroplated**  
Product Code: SSI-AB  
Weight: 0.11 kg



**scaffSAFE Anchor Bolts 12mm x 100mm**  
Product Code: SSI-AB12x100  
Weight: 0.12 kg



**scaffSAFE Anchor Bolts 16mm x 90mm**  
Product Code: SSI-AB16x90  
Weight: 0.18 kg



**scaffSAFE Ratchet in Box**  
Product Code: SSI-RATCHET  
Weight: 6.77 kg



## The Anchor Screw

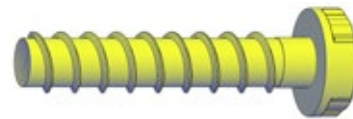
The scafSAFE anchor screws feature a patented tamper proof head design and have been manufactured to exceed the requirements for scaffolding ties to deliver superior fixing points.

### BENEFITS:

- **Shallow embedment depth** - closer anchor spacing and reduced edge distance
- **Less drilling and fewer operations** than with conventional anchors
- **Technical data for reusability in fresh concrete** (fck,cube = 10/15/20 Nmm<sup>2</sup>) for temporary applications

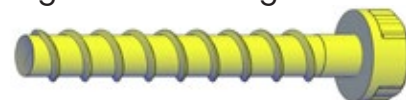
### 12mm dia. x 75mm Anchor

Shallow embedment depth - closer anchor spacing and reduced edge distance



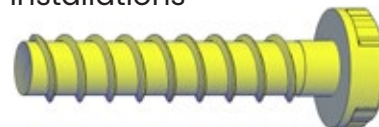
### 12mm dia. x 100mm Anchor

Deeper embedment depth - Higher Load rating



### 16mm dia. x 90mm Anchor

Highest load capacity for extreme installations



### Ratchet

Highest load capacity for extreme installations



# The Anchor Screw

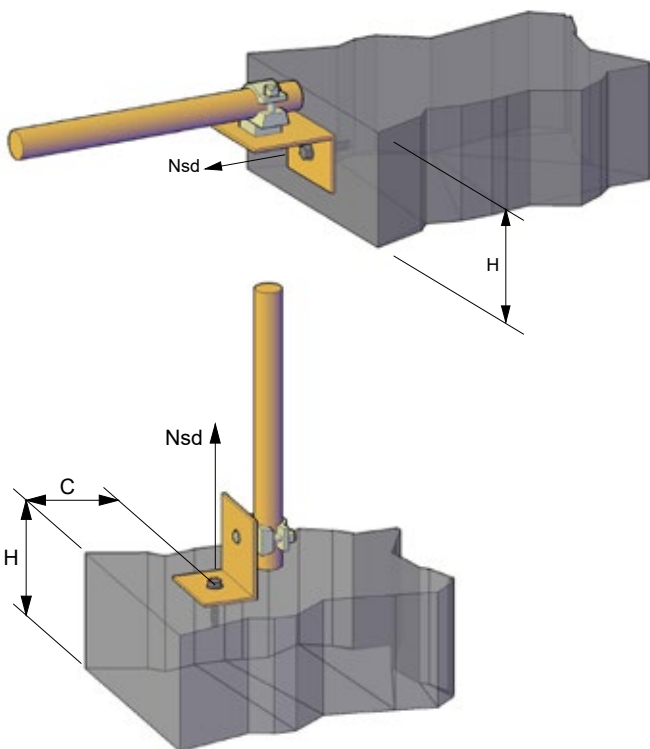
## Recommended Loads for a Single Anchor Installation

All data in this section applies to:

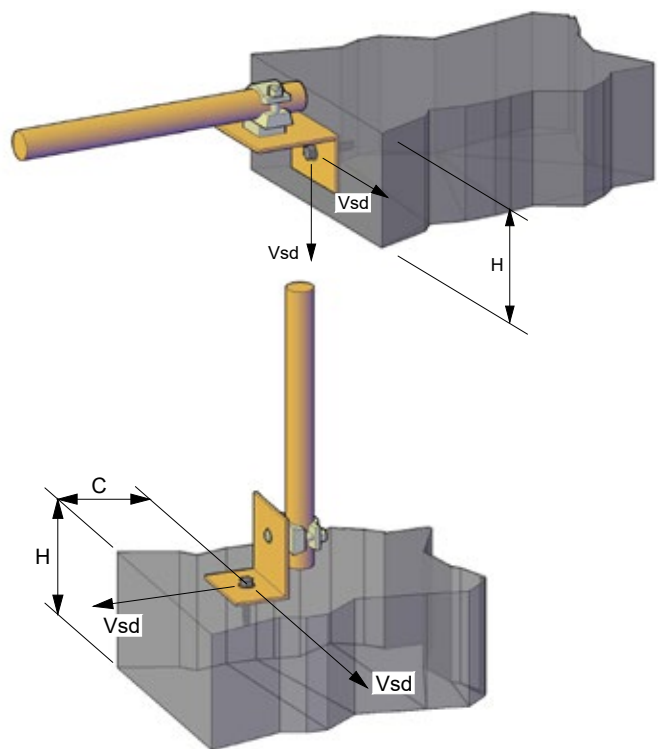
- Correct setting (see setting instructions)
- No edge distance and spacing influence
- Minimum base material thickness
- Concrete C32/40,  $f_{ck}$ , cube = 32N/mm<sup>2</sup>

Anchor Type	12mm dia. x 75mm	12mm dia. x 100mm	16mm dia. x 90mm
Un-cracked concrete			
Tension NRec [kN]	12.4	15.2	14.9
Shear VRec [kN]	14.0	14.0	25.3
Cracked concrete			
Tension NRec [kN]	8.7	10.6	10.5
Shear VRec [kN]	14.0	14.0	25.3

## Tension Example Installation

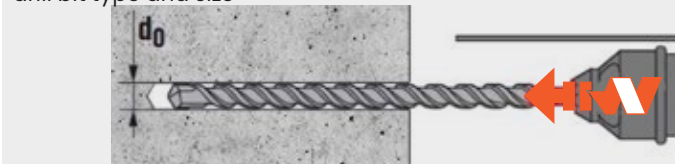


## Shear Example Installation

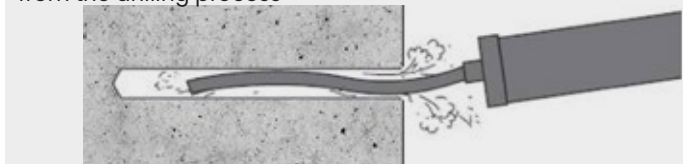


## Installation Methodology

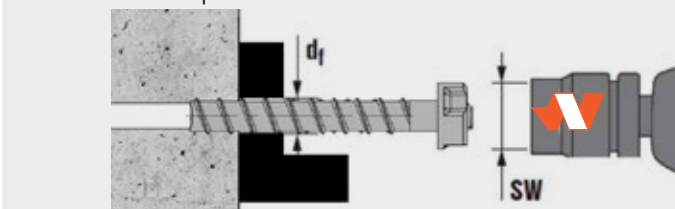
1. Drill a hole in the substrate using the specified drill bit type and size



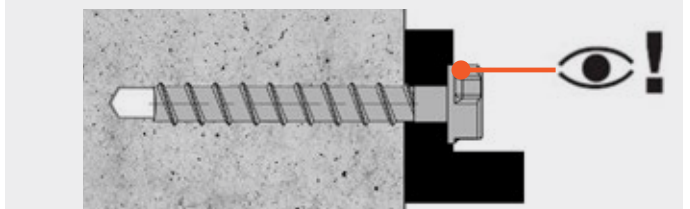
2. Clean the hole to remove debris and contaminants from the drilling process



3. Install the Anchor Screw using the supplied impact socket with an impact driver



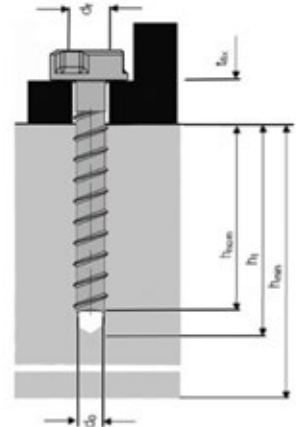
4. Check that the fixture plate is snug with the substrate material





## Installation Data

Anchor Type		12mm dia. x 75mm	12mm dia. x 100mm	16mm dia. x 90mm
Nominal Diameter or drill bit (mm)	do	12	12	12
Depth of Installation hole (mm)	hmin	85	130	100
Diameter or Fixture hole (mm)	df	14	14	18
Installation Torque (Nm)	Tinst	30	36	36
Maximum Fixture Thickness (mm)	Tfix	10	20	10
Effective Anchorage Depth (mm)	hef	55	65	60
Min Base Material Thickness (mm)	hmin	128	195	150
Min Edge Distance (mm)	Cmin	83	98	90
Min Anchor Spacing (mm)	Smin	ASK	ASK	ASK



## Tie pattern recommendation

The below data details the maximum distance between ties for each region.

	Region A	Region B	Region C	Region D
Wind Speed (km/hr)	148	173	212	263
Wind Pressure (kPa)	1.12	1.52	2.32	3.53
Sheeted area between ties [Ta] (m <sup>2</sup> )	11.5	8.5	5.5	3.6
Sheeted vertical distance between ties [y] (m)	3.0	3.0	3.0	3.0
Sheeted horizontal distance between ties [x] (m)	4.8	2.4	1.8	1.2
Unsheeted area between ties [Ta] (m <sup>2</sup> )	32.1	23.7	15.5	10.2
Unsheeted vertical distance between ties [y] (m)	3	3	3	3
Unsheeted horizontal distance between ties [x] (m)	7.2	7.2	4.8	2.4

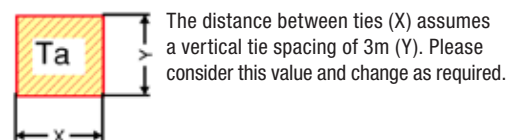
NOTE: Wind loads based on 15m scaffold height, TC2, temporary works recurrence interval 1/100. Design wind pressure varies between 0.92kPa to 2.64kPa. (Design wind speeds 134km/hr to 213km/hr). Drag= 1.2 (cladded). Solidity Ratio = 30%.

Horizontal single leg ties are rated to 9kN ULT (conventional couplers) or 12kN ULT (Layher couplers). Note that check couplers must be used inside and out of coupling to the standard. Consider the applied be load to the building structure is 12.0kN

All information if given is indicative and for information only. Please refer to AS1170.2:2011 Structural design actions - Wind actions or consult with a temporary works engineer if you are in doubt of any information relating to the tie details above.



- Region A Normal
- Region B Intermediate
- Region C Tropical Cyclones
- Region D Severe Tropical Cyclones



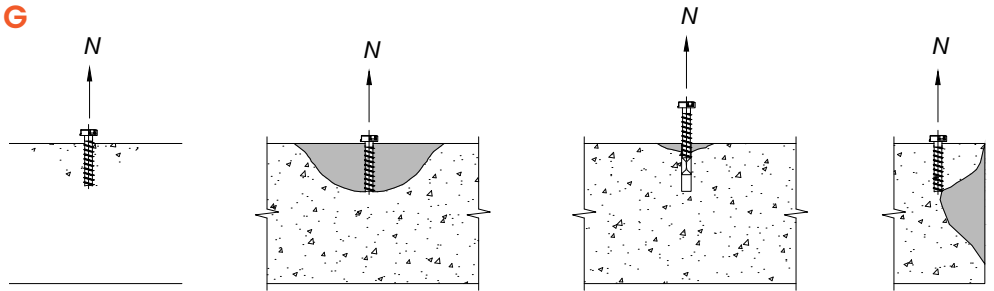
# The Anchor Screw

## Design process for single anchors in non cracked concrete

### STEP 1: TENSION LOADING

The design tensile resistance is the lower of: Concrete cone or concrete splitting resistance, whichever governing  $NRd = f_B \cdot N^*Rd,c$

$N^*Rd,c$  is obtained from the relevant design tables



#### $f_B$ influence of concrete strength

Concrete Strengths $f'_{c,cyl}$ (MPa)	20	25	32	40	50
$f_B$	0.79	0.87	1	1.11	1.22

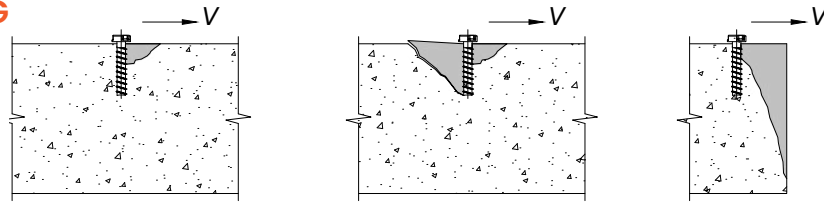
#### Design steel resistance (tension) $NRd,s$

Anchor Type	M12	M16
$NRd,s$ [kN]	30.3	56.5

### STEP 2: SHEAR LOADING

The design shear resistance  $VRd$  is the lower of: Design concrete edge resistance  $VRd,c = f_B \cdot V^*Rd,c$

$V^*Rd,c$  is obtained from the relevant design tables



#### $f_B$ influence of concrete strength

Concrete Strengths $f'_{c,cyl}$ (MPa)	20	25	32	40	50
$f_B$	0.79	0.87	1	1.11	1.22

#### Design steel resistance (shear) $VRd,s$

Anchor Type	M12	M16
$VRd,s$ [kN]	21	38

### STEP 3: COMBINE TENSION AND SHEAR LOADING

#### Calculation

The following equations must be satisfied:  $NSd/NRd + VSd/VRd \leq 1.2$  and  $NSd/NRd \leq 1, VSd/VRd \leq 1$

## Static and quasi-static resistance (for a single anchor)

All data in this section applies to:

- Correct setting (see setting instructions)
- No edge distance and spacing influence
- Minimum base material thickness
- Concrete C 20/25,  $f_{ck}$ , cube = 25N/mm<sup>2</sup>

### CHARACTERISTIC RESISTANCE

Anchor Type		12mm dia. x	12mm dia. x	16mm dia. x
		75mm	100mm	90mm
Un-Cracked				
	Tension NRk [kN]	27.9	34.1	33.6
	Shear VRk [kN]	23.8	23.8	42.2
Cracked				
	Tension NRk [kN]	19.5	23.9	23.5
	Shear VRk [kN]	23.8	23.8	34.2

### DESIGN RESISTANCE

Anchor Type		12mm dia. x	12mm dia. x	16mm dia. x
		75mm	100mm	90mm
Un-Cracked				
	Tension NRd [kN]	18.6	22.8	22.4
	Shear VRd [kN]	21	21	38
Cracked				
	Tension NRd [kN]	13	15.9	15.7
	Shear VRd [kN]	21	21	38

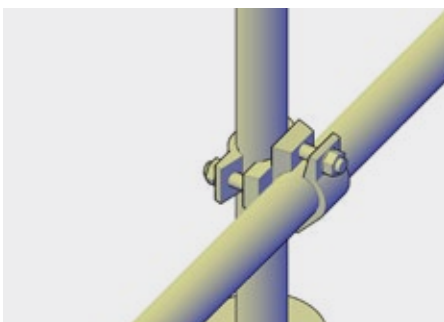
### RECOMMENDED LOADS

Anchor Type		12mm dia. x	12mm dia. x	16mm dia. x
		75mm	100mm	90mm
Un-Cracked				
	Tension NRec [kN]	12.4	15.2	14.9
	Shear VRec [kN]	14.0	14.0	25.3
Cracked				
	Tension NRec [kN]	8.7	10.6	10.5
	Shear VRec [kN]	14.0	14.0	25.3

# Couplers / Wall Ties

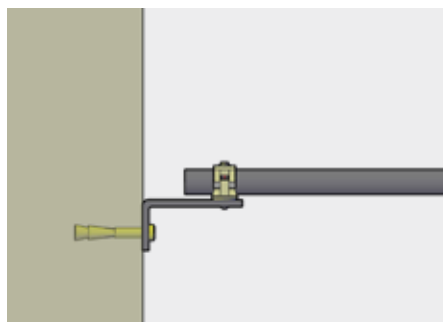
## ScaffSAFE Double Coupler/ ScaffSAFE Swivel Coupler

Working limit +- 6.25 kN  
NOTE: WLL Safety Factor = 2.0



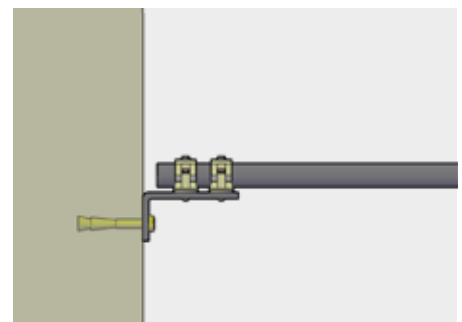
## ScaffSAFE Wall Tie Bracket 1 coupler

Working limit V (in kN) +- 6.25  
NOTE: WLL Safety Factor = 2.0  
Nut torque = 54 Nm



## ScaffSAFE Wall Tie Bracket 2 couplers

Working limit V (in kN) +- 6.25  
NOTE: WLL Safety Factor = 2.0  
Nut torque = 54 Nm





# Secure your scaffolding with scaffSAFE

- Safer operations
- Minimised site risk and liability
- Accident prevention
- Reduced costs and complexity of safety measures
- Traceability of products & tools



**FOR MORE INFO, CONTACT US.**

E : [info@scaffsafeinternational.com](mailto:info@scaffsafeinternational.com)

T : 1300 865 895

[www.scaffsafeinternational.com](http://www.scaffsafeinternational.com)