The Australian designed tie system made to make scaffold safer

scaffSAFE

PRODUCT BROCHURE

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.

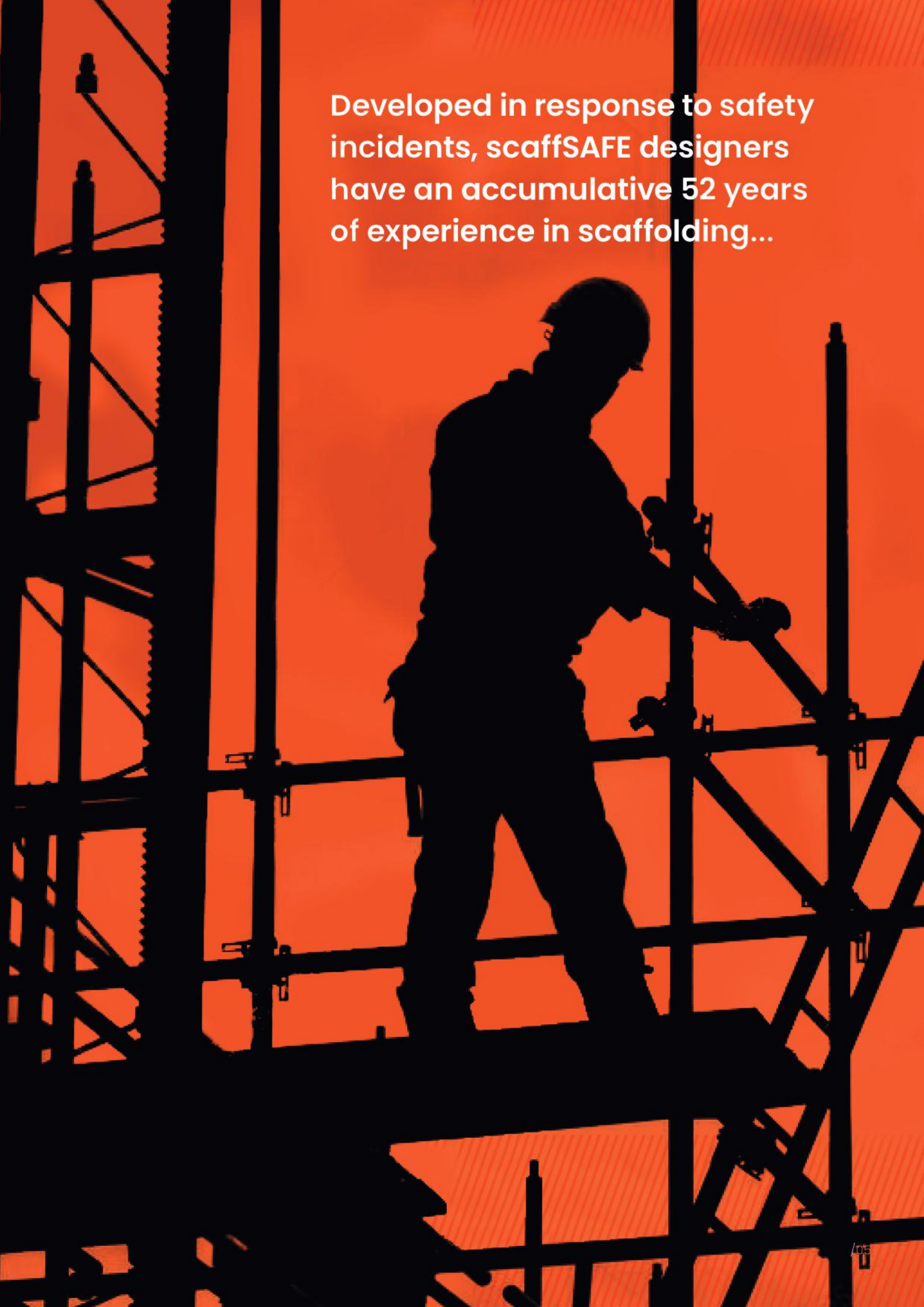
The scaffSAFE spanner (tool) is uniquely designed to lock onto the coupler nut and head of the anchor screws. Each spanner issued has a unique identification number and the name of the business to which it belongs laser engraved. This feature allows tool traceability via our white label cloud tracking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

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

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

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.

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 Nmm2) 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

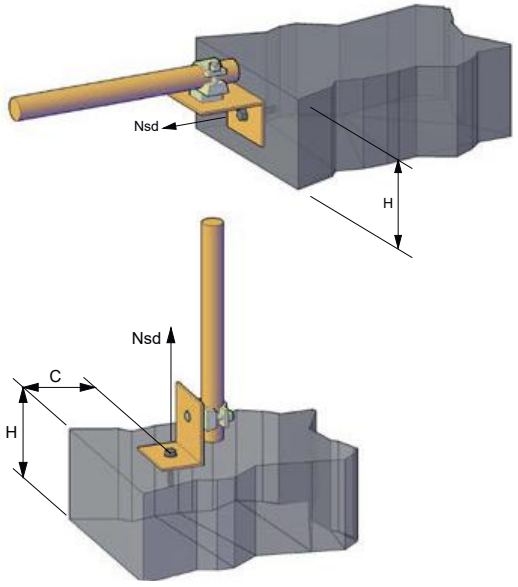
Recommended Loads for a Single Anchor Installation

All data in this section applies to:

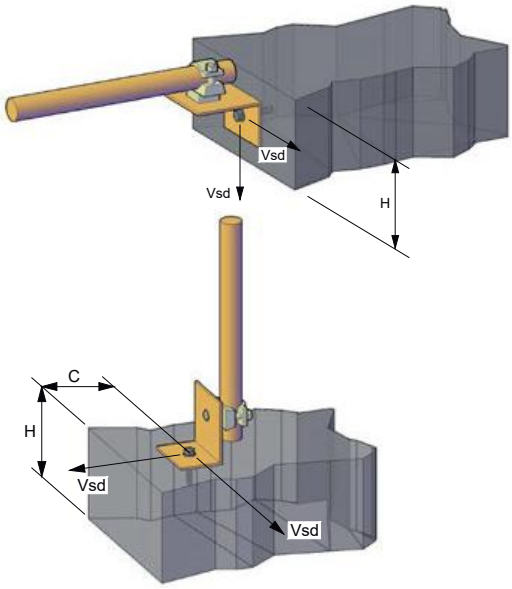
- Correct setting (see setting instructions)
- No edge distance and spacing influence
- Minimum base material thickness
- Concrete C32/40, fck, cube = 32N/mm2

Anchor Type		M12	
Un-cracked concrete			
1st embedment depth			
Recommended shear load (imfluence of concrete)	V_{Rec}	[kN]	15
Recommended shear load (pure shear load)	$V_{rec,s}$	[kN]	23,8
2st embedment depth			
Recommended shear load (imfluence of concrete)	V_{Rec}	[kN]	23,8
Recommended shear load (pure shear load)	$V_{rec,s}$	[kN]	23,8
3st embedment depth			
Recommended shear load (imfluence of concrete)	V_{Rec}	[kN]	23,8
Recommended shear load (pure shear load)	$V_{rec,s}$	[kN]	23,8
Cracked concrete			
1st embedment depth			
Recommended shear load (imfluence of concrete)	V_{Rec}	[kN]	10,7
Recommended shear load (pure shear load)	$V_{rec,s}$	[kN]	23,8
2st embedment depth			
Recommended shear load (imfluence of concrete)	V_{Rec}	[kN]	17,1
Recommended shear load (pure shear load)	$V_{rec,s}$	[kN]	23,8
3st embedment depth			
Recommended shear load (imfluence of concrete)	V_{Rec}	[kN]	23,8
Recommended shear load (pure shear load)	$V_{rec,s}$	[kN]	23,8

Tension Example Installation

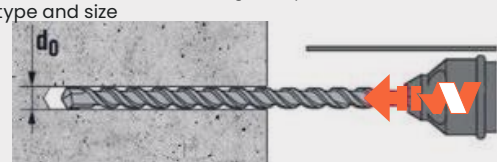


Shear Example Installation

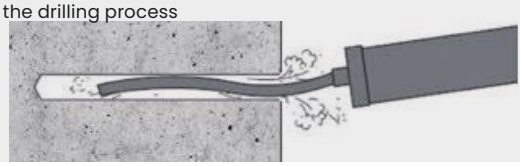


Installation Methodology

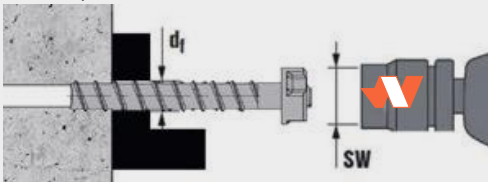
1. Drill a hole in the substrate using the specified drill bit type and size



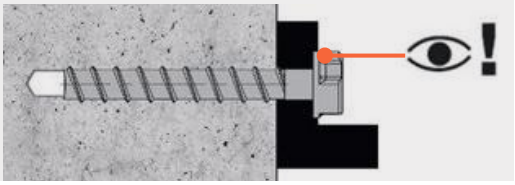
2. Clean the hole to remove debris and contaminants from the drilling process



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

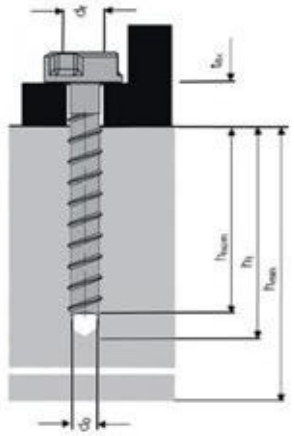


4. Check that the fixture plate is snug with the substrate material



Installation Data

ScaffSAFE			M12		
Drill hole diameter	d_0	[mm]	Ø12		
Nominal embedment depth	h_{nom}	[mm]	60	80	100
Min hole depth	$h_0 \geq$	[mm]	70	90	110
Max installation torque	T_{inst}	[Nm]	1000*		
Min thickness of concrete member	h_{min}	[mm]	110	130	155
Min spacing	S_{min}	[mm]	80	80	80
Min edge distance	C_{min}	[mm]	80	80	80
Effective embedment depth	h_{ef}	[mm]	46	63	80
Threaded outer diameter	d_{th}	[mm]	14,90		
Characteristic resistance under tension load (steel failure)	$N_{Rk,s}$	[kN]	83.1		
Characteristic tension - steel failure	$V^0_{Rk,s}$	[kN]	41.6		
Characteristic resistance (pull-out failure) cracked concrete	$N_{Rk,p}$	[kN]	15,40	24,60	35,20
Characteristic resistance (pull-out failure) uncracked concrete	$N_{Rk,p}$	[kN]	15,40	24,60	35,20



* The screw tightening torque depends on the type of concrete, depending on whether it is C20/25-C50/60 class concrete, the type of aggregate, the type of drilling, and the drill used. The tightening torque of 1000Nm cannot be exceeded

Tie pattern recommendation

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

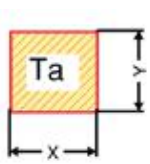
	Region A	Region B	Region C	Region D
Wind Speed (km/hr)	148	173	212	263
Wind Preassure (kPa)	1.12	1.52	2.32	3.53
Sheeted area between ties [Ta] (m2)	11.5	8.5	5.5	3.6
Sheeted vertical distance between ties [y] (m)	3.0	3.0	3.0	3.0
Sheeted horizontal distance between ties [x] (m)	4.8	2.4	1.8	1.2
Unsheeted area between ties [Ta] (m2)	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



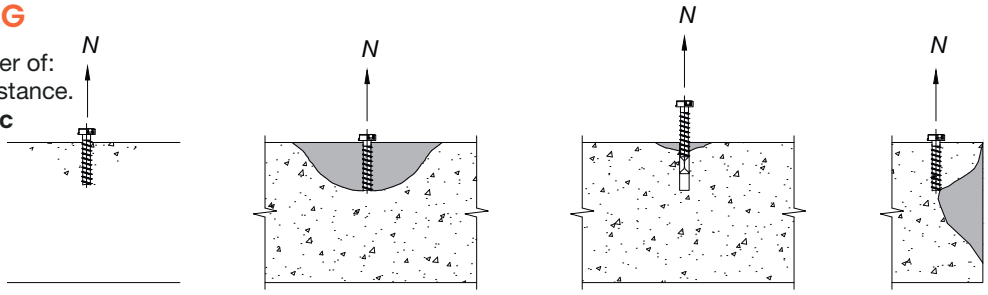
The distance between ties (X) assumes a vertical tie spacing of 3m (Y). Please consider this value and change as required.

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 = fB • N*Rd.c**



N*Rd.c is obtained from the relevant design tables

Anchor Type	M12		
Un-cracked concrete			
1st embedment depth			
Design tension load	NRd	NRd	8,8
2st embedment depth			
Design tension load	NRd	[kN]	16,8
3st embedment depth			
Design tension load	NRd	[kN]	24,1
Cracked concrete			
1st embedment depth			
Design tension load	NRd	[kN]	6,2
2st embedment depth			
Design tension load	NRd	[kN]	12
3st embedment depth			
Design tension load	NRd	[kN]	17,2

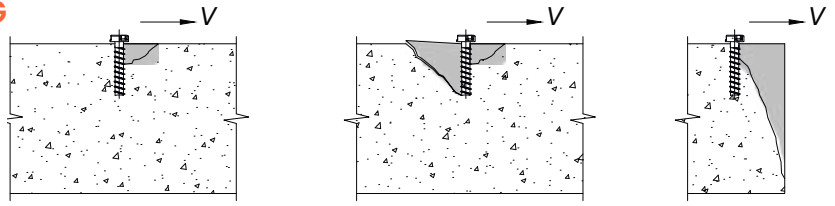
fB influence of concrete strength

Concrete Strengths f'c,cyl (MPa)	20	25	32	40	50
fB	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 = fB • V*Rd,c**

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

fB influence of concrete strength

Concrete Strengths f'c,cyl (MPa)	20	25	32	40	50
fB	0.79	0.87	1	1.11	1.22

Design steel resistance (shear) VRd,s

Anchor Type	M12		
Un-cracked concrete			
1st embedment depth			
Design shear load (Influence of concrete)	VRd	[kN]	21
Design shear load (pure shear load)	VRd,s	[kN]	33,2
2st embedment depth			
Design shear load (Influence of concrete)	VRd	[kN]	33,3
Design shear load (pure shear load)	VRd,s	[kN]	33,3
3st embedment depth			
Design shear load (Influence of concrete)	VRd	[kN]	33,3
Design shear load (pure shear load)	VRd,s	[kN]	33,3
Cracked concrete			
1st embedment depth			
Design shear load (Influence of concrete)	VRd	[kN]	10,7
Design shear load (pure shear load)	VRd,s	[kN]	23,8
2st embedment depth			
Design shear load (Influence of concrete)	VRd	[kN]	24
Design shear load (pure shear load)	VRd,s	[kN]	33,3
3st embedment depth			
Design shear load (Influence of concrete)	VRd	[kN]	33,3
Design shear load (pure shear load)	VRd,s	[kN]	33,3

STEP 3: COMBINE TENSION AND SHEAR LOADING

Calculation

The following equations must be satisfied: **NSd/NRd + VSd/VRd ≤ 1.2** and **NSd/NRd ≤ 1, VSd/VRd ≤ 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, fck, cube = 25N/mm ²

DESIGN RESISTANCE

Anchor Type			M12
Un-cracked concrete			
1st embedment depth			
Design tension load	N_{Rd}	[kN]	8,8
Design shear load (Influence of concrete)	V_{Rd}	[kN]	21
Design shear load (pure shear load)	$V_{Rd,s}$	[kN]	33,2
2st embedment depth			
Design tension load	N_{Rd}	[kN]	16,8
Design shear load (Influence of concrete)	V_{Rd}	[kN]	33,3
Design shear load (pure shear load)	$V_{Rd,s}$	[kN]	33,3
3st embedment depth			
Design tension load	N_{Rd}	[kN]	24,1
Design shear load (Influence of concrete)	V_{Rd}	[kN]	33,3
Design shear load (pure shear load)	$V_{Rd,s}$	[kN]	33,3
Cracked concrete			
1st embedment depth			
Design tension load	N_{Rd}	[kN]	6,2
Design shear load (Influence of concrete)	V_{Rd}	[kN]	10,7
Design shear load (pure shear load)	$V_{Rd,s}$	[kN]	23,8
2st embedment depth			
Design tension load	N_{Rd}	[kN]	12
Design shear load (Influence of concrete)	V_{Rd}	[kN]	24
Design shear load (pure shear load)	$V_{Rd,s}$	[kN]	33,3
3st embedment depth			
Design tension load	N_{Rd}	[kN]	17,2
Design shear load (Influence of concrete)	V_{Rd}	[kN]	33,3
Design shear load (pure shear load)	$V_{Rd,s}$	[kN]	33,3

RECOMMENDED RESISTANCE

Anchor Type			M12
Un-cracked concrete			
1st embedment depth			
Recommended tension load	N_{Rec}	[kN]	6,3
Recommended shear load (imfluence of concrete)	V_{Rec}	[kN]	15
Recommended shear load (pure shear load)	$V_{rec,s}$	[kN]	23,8
2st embedment depth			
Recommended tension load	N_{Rec}	[kN]	12
Recommended shear load (imfluence of concrete)	V_{Rec}	[kN]	23,8
Recommended shear load (pure shear load)	$V_{rec,s}$	[kN]	23,8
3st embedment depth			
Recommended tension load	N_{Rec}	[kN]	17,2
Recommended shear load (imfluence of concrete)	V_{Rec}	[kN]	23,8
Recommended shear load (pure shear load)	$V_{rec,s}$	[kN]	23,8
Cracked concrete			
1st embedment depth			
Recommended tension load	N_{Rec}	[kN]	4,5
Recommended shear load (imfluence of concrete)	V_{Rec}	[kN]	10,7
Recommended shear load (pure shear load)	$Vr_{rec,s}$	[kN]	23,8
2st embedment depth			
Recommended tension load	N_{Rec}	[kN]	8,3
Recommended shear load (imfluence of concrete)	V_{Rec}	[kN]	17,1
Recommended shear load (pure shear load)	$V_{rec,s}$	[kN]	23,8
3st embedment depth			
Recommended tension load	N_{Rec}	[kN]	12,3
Recommended shear load (imfluence of concrete)	V_{Rec}	[kN]	23,8
Recommended shear load (pure shear load)	$V_{rec,s}$	[kN]	23,8

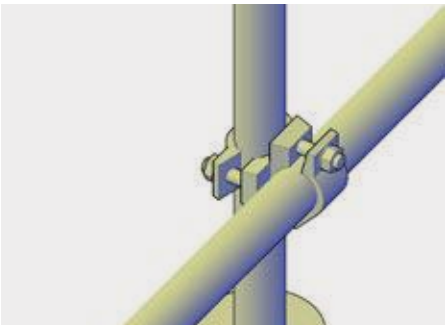
CHARACTERISTIC LOADS

Anchor Type			M12
Un-cracked concrete			
1st embedment depth			
Characteristic tension load	N_{Rk}	[kN]	15,8
Characteristic shear load (Influence of concrete)	V_{Rk}	[kN]	31,5
Characteristic shear load (pure shear load)	$V_{Rk,s}$	[kN]	41,6
2st embedment depth			
Characteristic tension load	N_{Rec}	[kN]	25,3
Characteristic shear load	V_{Rec}	[kN]	41,6
Characteristic shear load (pure sher load)	$V_{Rk,s}$	[kN]	41,6
3st embedment depth			
Characteristic tension load	N_{Rec}	[kN]	36,1
Characteristic shear load	V_{Rec}	[kN]	41,6
Characteristic shear load (pure sher load)	$V_{Rk,s}$	[kN]	41,6
Cracked concrete			
1st embedment depth			
Characteristic tension load	N_{Rec}	[kN]	11,2
Characteristic shear load	V_{Rec}	[kN]	22,5
Characteristic shear load (pure sher load)	$V_{Rk,s}$	[kN]	41,6
2st embedment depth			
Characteristic tension load	N_{Rec}	[kN]	18
Characteristic shear load	V_{Rec}	[kN]	36
Characteristic shear load (pure sher load)	$V_{Rk,s}$	[kN]	41,6
3st embedment depth			
Characteristic tension load	N_{Rec}	[kN]	25,8
Characteristic shear load	V_{Rec}	[kN]	41,6
Characteristic shear load (pure sher load)	$V_{Rk,s}$	[kN]	41,6

Couplers / Wall Ties

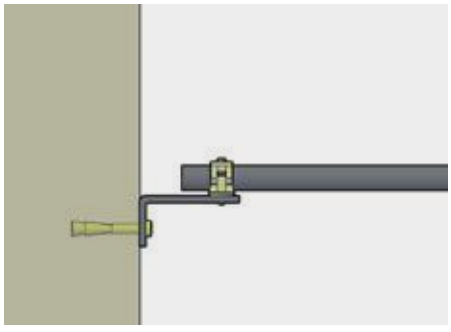
ScaffSAFE Double Coupler/ ScaffSAFE Swivel Coupler

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



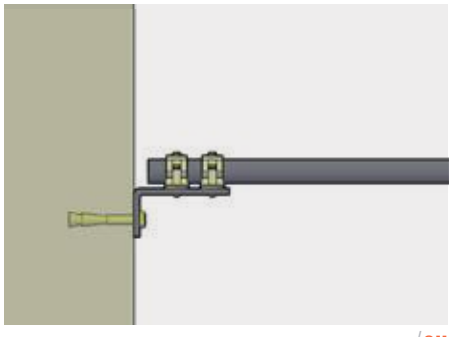
ScaffSAFE Wall Tie Bracket 1 coupler

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.
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