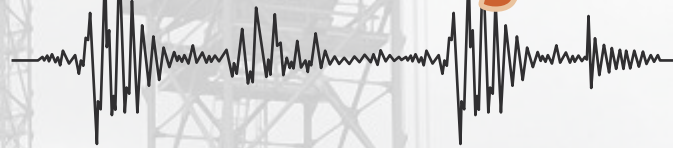




**Ramset™**

# Fastening Solutions

**Fire Rated • Cracked Concrete • Seismic Design**



**• CHEMICAL FIXINGS • MECHANICAL FIXINGS • DIRECT FIXINGS •**

**TW CONSTRUCTION PRODUCTS**

**Buildex®**

**spit**

**MODFIX**

## Company Profile

ITW is a Fortune 150 diversified manufacturing company that was founded on innovation and expanded on the strength of its customer commitment. For over 100 years, ITW employees have kept an entrepreneurial spirit alive that is firmly focused on its customers. Ramset™, as part of ITW group, is a renowned brand in developing, manufacturing and supplying the latest technology for the construction industry since 1952. Our team of professionals is well supported by ITW technical experts worldwide.

## Masters of concrete technology

Ramset expertise in concrete technology includes systems for chemical and mechanical anchoring, drilling, diamond coring, construction chemicals, as well as direct fixing into concrete and steel. Our areas of speciality include: Cracked and non-cracked concrete anchoring systems tested to and compliant with International Standards, front to back of project engineering design and specification services.

## Designed and engineered to work

Ramset minimise design risk and maximise project performance by developing and manufacturing a significant portion of its anchoring systems. Our dedicated approach to product development and manufacturing has resulted in production efficiencies, greater flexibility, the ability to quickly adapt products to project needs and to deliver to the customer in full on time.

## Anchoring design services

Ramset provides assistance for qualified design professionals to choose a suitable anchoring solution which meets a project specific set of design inputs such as: Design tools for anchor layouts and calculating performance in grouped anchor configurations, tailored outcomes to suit project specific anchoring and performance criteria. Ramset is a quality endorsed company.

## Ramset Hong Kong

In order to serve Hong Kong, Macau and Southern China better, RAMSET FASTENERS (HONG KONG) LIMITED is also a channel to provide the best products of different brands under ITW umbrella, including but not limited to ITW Spit, Buildex, Reid, Modfix, Miska and Danley.

## ITW Quality Construction Brands



**Ramset™**

Performance Engineered anchoring, drilling and fixing systems

**spit**

International approved anchoring, drilling and fixing systems

**reid™**

Lifting, reinforcing, fastening and propping solutions for precast concrete and on site tilt up construction

**Buildex®**

Self drilling screws and fasteners

**MODFIX**

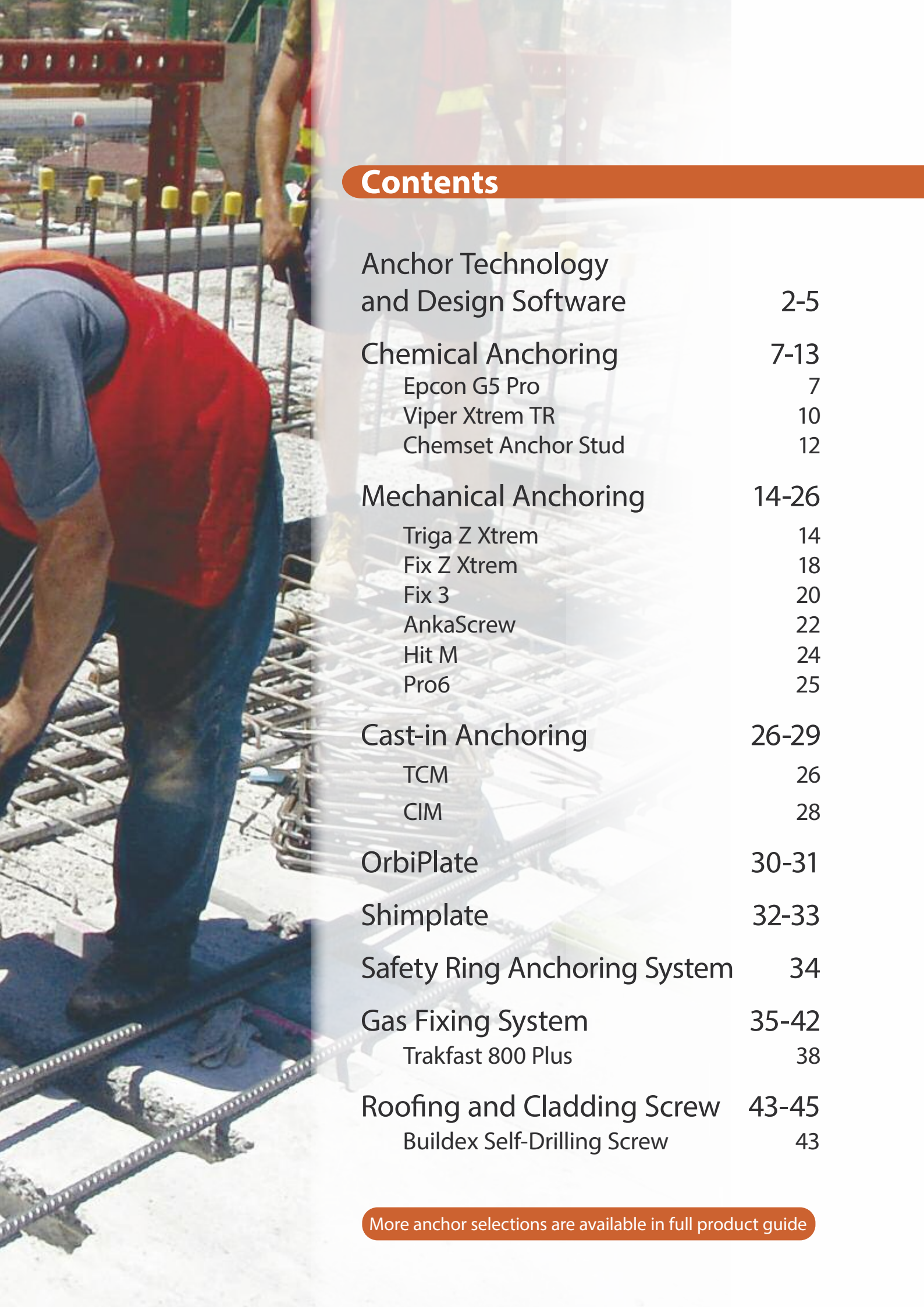
Plastic accessories including shimplates

**DANLEY Systems**

Industrial concrete flooring and pavement construction systems specialist

**miska**

Expansion joint solutions for civil and architectural construction projects



## Contents

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More anchor selections are available in full product guide

## Different Types of Anchors

### Torque Setting Expansion Anchors

Expansion is achieved by the application of torque to a bolt or nut which causes a cone to be drawn into a sleeve. Anchorage is verified with this torque.

### Displacement Setting Expansion Anchors

Expansion is achieved by hammering a component (normally a cone) which is captive in the body of the anchor. Anchorage is verified by the travel of the expansion component.

### Rotation Setting Anchors

Anchorage is achieved by screwing the anchor into the concrete and creating mechanical interlock. Allows reduced spacings and edge distances than for expansion anchors.

### Cast-In Anchors

Anchorage is achieved by having the anchor being retained in the hardened concrete by either the enlargement on the base of the anchor, or by a bar located in the cross-hole. Cast-In Anchor allows reduced spacing and edge distances than expansion anchors and eliminates the chance of hitting rebars when comparing to all post-installed anchors.

### Chemical Anchors

The anchor consists of a fixing element and a synthetic-based adhesive. The two components are placed in the hole and after curing the adhesive creates dual adhesion, one between the fixing element and the adhesive and the other between the adhesive and base material. The adhesive is supplied either in a glass capsule or an injection cartridge. Chemical anchors generate lower stresses in the base material so they can be used closer to edges and closer together.

### Friction Based Light Duty Anchors

Performance is achieved by the introduction of an expansion component which is screwed or hammered into the anchor body. The anchor body is thus firmly blocked against the sides of the drilled hole.

### Deformation Based Light Duty Anchors

The anchor body is drawn against the interior of the base material by deformation.

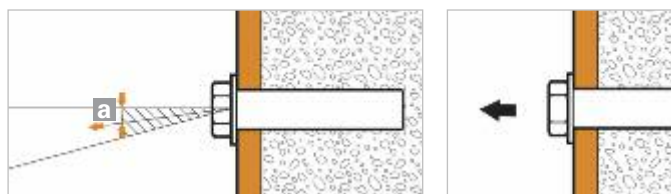
## Anchor Systems - Principles of Operation

### Hollow or Low Strength Base Materials

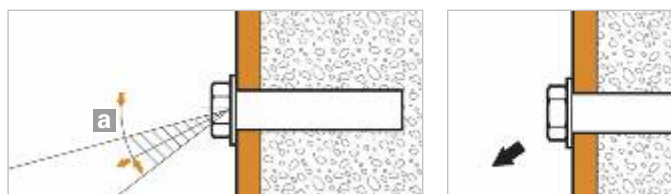
We have stated indicative loads for performance in certain types of masonry, both solid and hollow, while indicating various types. Given the vast selection of different types of bricks and blocks that are encountered on site, it is recommended that adequate site tests be carried out to establish a realistic recommended load for:

- Solid concrete block
- Solid brick
- Hollow concrete block
- Hollow brick
- Dry wall
- Aerated concrete and gypsum block

### Load Directions - Tensile ( $0^\circ \leq a \leq 15^\circ$ )



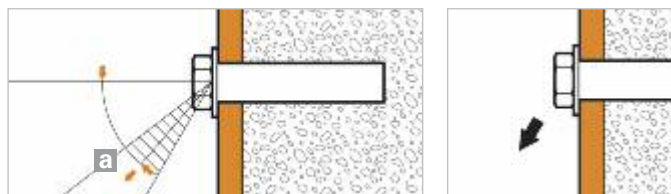
### Oblique $30^\circ$ ( $15^\circ < a \leq 37.5^\circ$ )



### Oblique $45^\circ$ ( $37.5^\circ < a \leq 52.5^\circ$ )



### Oblique $60^\circ$ ( $52.5^\circ < a \leq 67.5^\circ$ )

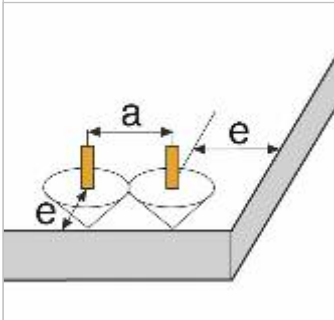


### Shear ( $67.5^\circ < a \leq 90^\circ$ )



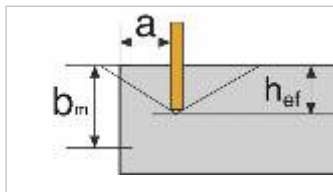
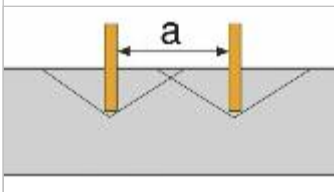
## Anchor Spacing

Taking into account the stress values created by the expansion anchors and the loads they are designed to support, the following points must be considered when establishing the performance of each individual product (recommended load):



- The minimum thickness of the base material ( $b_m$ ) (determined by anchor effective depth  $h_{ef}$ )
- The minimum distance between anchors ( $a$ )
- The distance of anchors from edges of the slab or structure ( $e$ )

The coincidence of stress cones of adjacent anchors in concrete reduces their tensile performance.



### Anchor Effective Depth: $h_{ef}$

Each anchor has a minimum anchorage depth which guarantees its minimum rated load (recommended load). Certain anchor types can be embedded deeper with a resulting increase in performance. For further information consult the Ramset™ Technician.

### Reduced Distance Between Anchors

The distance between anchors and from edges and corners can also be reduced in some cases. Such reduction will affect the recommended load of the anchor and one or more reduction coefficients will have to be applied.

## Load Classification

### Static Load

A load is static when it's constant and stationary.

### Vibrating Load

A variable cyclic load of relatively low amplitude and high frequency (motor vibration for example).

### Dynamic Load

A variable load in time with a relatively medium or high amplitude with or without negative loading (wind for example).

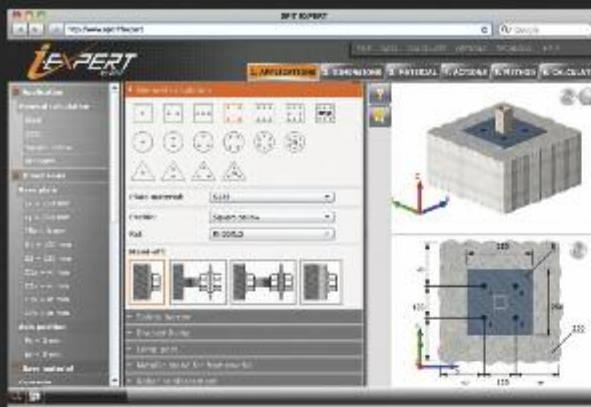
### Shock Load

Isolated high load applied in a very short period of time.

These four load types can be occasional or permanent. An occasional load is applied during a limited period of time and several times. A permanent load is applied continuously.



## 3D Interface



### A userfriendly 3D visual interface

The new one I-Expert software allows you to create 3D design models of all your applications :

- Rectangular, circular, triangular base plates;
- Predefined applications such as safety barriers, brackets, lamp post, metallic stand for framework
- Post installed rebar connections.

## A logical and intuitive interface

### A logical and intuitive interface

The main menu guides you through the easy to follow steps:

- Selection of the application,
- Definition of the dimensions of the base plate,
- Definition of the concrete base material and the environmental conditions,
- Data input of combined forces ie : tensile, shear, bending moment, torsion moment..



## A userfriendly result display



### A userfriendly result display

From the resulting display, by using filter you can select the optimal anchor, have access to the resistance tables for the group of anchors, the installation data and edit the calculation sheet in PDF format.

You can also select one anchor and run the manual and automatic optimisation program.

# Design per ETAG

FIND US ON

<https://anchor-design.itwcp.com/itwcpsea/>

## Custom mode



**With the custom mode, i-Expert has no limits**

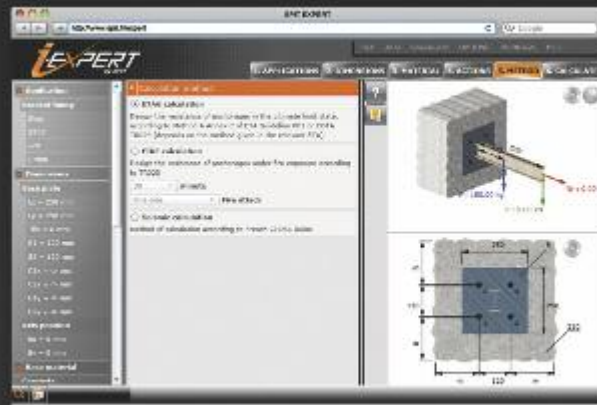
It gives the possibility to design applications with unlimited fixings and defines the position coordinates of each anchor

## Calculation method

### European calculation method

The new I-Expert software allows you to design according to the following calculation methods :

- Design according to ETAG 001 Annex C (Amended September 2010);
- Design according to Technical Report TR029 (amended September 2010) for chemical anchors with variable embedment);
- Design resistance to fire according to Technical report TR020;
- Design of anchorage under seismic actions according to French CISMAR Recommendations;
- Design rebar reinforcement according to Eurocode 2, including the possibility to design to fire and seismic actions.

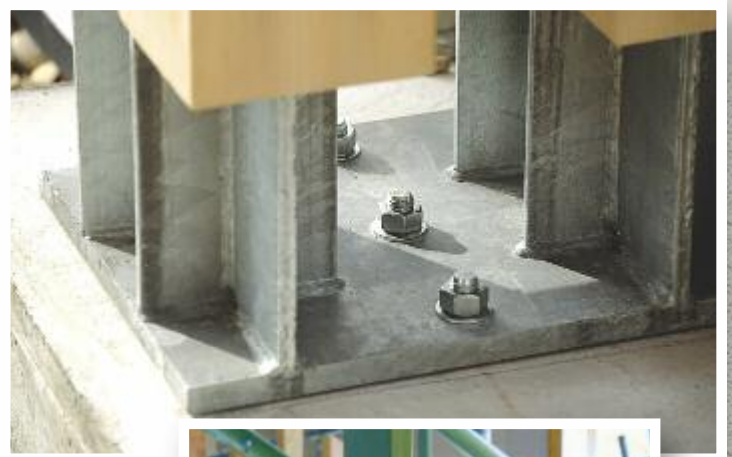


## Checking of the base plate thickness



### Finite Elements calculation

I-EXPERT software offers the possibility of creating a design model of the base plate using finite elements in order to check that it is thick enough to guarantee its rigidity.



\*Suit various design conditions

- Cracked concrete
- Seismic
- 4 hours FRP



## Approvals / Listings

100 YEARS WORKING LIFE

LOW VOC

ETA CE  
European Technical Agreement  
ETA-18/0675  
ETA-20/0752

POTABLE WATER  
AS PER AS4020



≡ 4 hours fire tested.

- ETA approved for cracked concrete and seismic zone
- 4 hours FRP as per ISO834
- Potable water as per AS4020
- Low VOC as per Green Star GBCA

## Performance Related



Dynamic Load



Pull down



Cracked Concrete



Fire Resistant



Seismic

## Material Specification



Hot dipped Galvanised



Stainless Steel



Zinc Plated

## Description

EPCON G5 Pro High Strength Epoxy  
A high performance chemical epoxy adhesive. Fast cure with extended working time for use in tropical climate. Works well in dry, damp, wet and flooded holes.

## Features and Benefits

- Formulated for hot or warm weather
- High strength epoxy with 100 years working life
  - Fire rated: tested up to 4 hours FRP
  - Shorter curing time with extended working time
  - Works in damp holes and underwater applications
  - Low shrinkage, suitable for cored and oversized holes
  - Virtually odorless, can be used indoors
  - Easy handling and installations
  - Re-sealable tip

## Specification

EPCON G5 Pro is a heavy duty, pure epoxy injection chemical anchor.

Setting characteristics at 27°C:

- Working time: 12 minutes
- Full cure time: 4 hours.

## Substrates

- Concrete (cracked and non-cracked)
- Solid block
- Solid brick
- Natural stone

## Applications

- Reinforcing and starter bars
- Underwater fixings
- Diaphragm wall fixings
- Guard rail fixings
- Parapet wall fixings
- Tunnel fixings
- Floor slabs



| Base Material Temperature (C°) | Working Time | Cure Time |
|--------------------------------|--------------|-----------|
| 35                             | 6 minutes    | 2 hours   |
| 30                             | 8 minutes    | 4 hours   |
| 25                             | 12 minutes   | 6 hours   |
| 20                             | 18 minutes   | 8 hours   |
| 15                             | 25 minutes   | 12 hours  |
| 10                             | 40 minutes   | 18 hours  |

## Installation temperature

~ Substrate: 5°C to 40°C

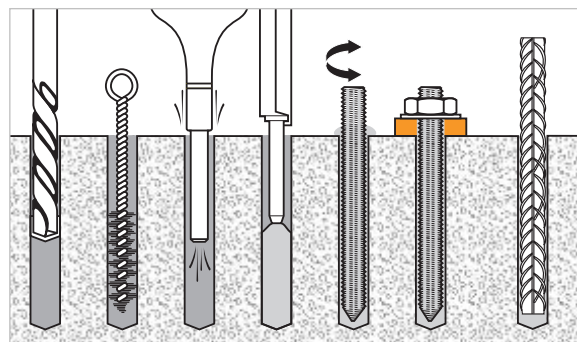
- Load should not be applied to anchor until the chemical has sufficiently cured as specified

## Service temperature

-40°C to 70°C

## Installation

1. Drill correct diameter hole to recommended depth.
2. Clean hole thoroughly with brush and air pump 3~4 times.
3. Assemble nozzle onto cartridge. Dispense and discard enough chemical until uniform mix is achieved. Inject from the bottom of the hole gradually, filling in until 40% full.
4. Insert the rod/stud or rebar by hand to full depth, using slow rotating movement.
5. Allow EPCON G5 PRO to cure for specified period before loading.



## Product Range - EPCON G5™ PRO Epoxy Resin Adhesive

| Part No. | Description                                   | Order Qty |
|----------|-----------------------------------------------|-----------|
| G5 PRO   | EPCON G5 PRO (600ml)                          | 15        |
| ISNE     | ISNE Nozzle                                   | 5         |
| CUAP     | CUAP Chemset Universal Applicator             | 1         |
| CUAR-18V | CUAR 18V Chemset Universal Powered Applicator | 1         |

G5 PRO ISNE



ISNE



CUAR-18V



CUAP

## EPCON G5™ PRO - Recommended Working Loads in 40N/mm<sup>2</sup> non-cracked Concrete - Anchor Studs

| Thread Ø | Hole Ø (mm) | Fixture Hole Ø (mm) | Embedment Depth (mm) | Hole Depth (mm) | Torque (Nm) | Shear Load (kN) | Tension Load (kN) |
|----------|-------------|---------------------|----------------------|-----------------|-------------|-----------------|-------------------|
| M8       | 10          | 10                  | 80                   | 80              | 10          | 5.0             | 11.8              |
| M10      | 12          | 12                  | 90                   | 90              | 20          | 7.7             | 14.7              |
| M12      | 14          | 14                  | 110                  | 110             | 40          | 11.3            | 21.6              |
| M16      | 18          | 18                  | 125                  | 125             | 80          | 21.0            | 26.1              |
| M20      | 22          | 22                  | 170                  | 170             | 120         | 32.7            | 44.4              |
| M24      | 26          | 26                  | 210                  | 210             | 160         | 47.0            | 65.9              |
| M30      | 35          | 33                  | 280                  | 280             | 200         | 74.7            | 86.9              |

\* Safety factor for all loads = 3

\* This table does not consider edge distance and anchor spacing effects. Please refer to Ramset Design Guide for more information

\* Recommended shear load is limited by anchor stud grade 8.8 refer to ISO 898-1:2009(E). For loading of other material grade, please contact Ramset Technical Department.

\* Pull out test for single anchor = working load x 1.5

\* For cracked concrete design condition or anchor size larger than M30, please contact Ramset for further support.

Rebar Fixing with EPCON G5 PRO - for loading and installation, please refer to following pages.

## STRENGTH LIMIT STATE DESIGN (Rebar Fixing)

### RAMSET CHEMSET INJECTION SYSTEM - EPCON G5 PRO METHOD STATEMENT FOR INSTALLATION OF REBARS

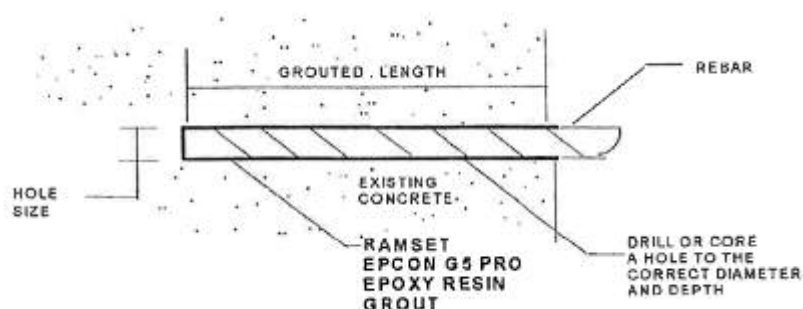
| BAR DIA | HOLE SIZE | GROUTED LENGTH | CHAR. ULT. TENSILE LOAD as per BS5080 Part 1 | YIELD STRENGTH OF 500N/mm <sup>2</sup> HIGH YIELD DOWEL BAR |
|---------|-----------|----------------|----------------------------------------------|-------------------------------------------------------------|
| Y10     | 14 mm     | 100 mm         | 42.1 kN                                      | 39.3 kN                                                     |
| Y12     | 16 mm     | 120 mm         | 56.8 kN                                      | 56.6 kN                                                     |
| Y16     | 20 mm     | 160 mm         | 103.7 kN                                     | 100.5 kN                                                    |
| Y20     | 25 mm     | 200 mm         | 159.1 kN                                     | 157.1 kN                                                    |
| Y25     | 32 mm     | 250 mm         | 246.5 kN                                     | 245.4 kN                                                    |
| Y32     | 40 mm     | 320 mm         | 428.5 kN                                     | 402.1 kN                                                    |

\* It is based on non-cracked concrete with strength 30MPa.

- Please apply appropriate factor of safety to get your design working load.
- Pull Out Test Per BS5080: Part 1 had been performed on full range of high yield dowels bar of yield strength 500N/mm<sup>2</sup>. Please consult Ramset technical team for rebar size Y40 or above.
- No load reduction to be applied for installation conditions including dry, water-saturated, water-filled, and underwater applications.
- **For design condition under 1-4 hours FRP, please consult RAMSET technical team.**

## Installation Procedure

- 1) Drill a hole to the correct diameter and depth for particular rebar size being installed.
- 2) Wire brush the hole using wire brush, blow out all dust with forced air and leave no slurry.
- 3) Insert nozzle and fill the hole to at least one third its depth. When starting new cartridges or new nozzle, dispense and discard enough adhesive until uniform light grey colored is achieved.
- 4) Before the G5 PRO gels, insert rebar into the bottom of hole with a slow twisting motion. Wipe off the excess resin if necessary.
- 5) After the G5 PRO has fully cured, attach the fixture.





Product from  
**spit**

## Description

Extreme performance resin, specifically formulated for extreme rebar and stud applications. With virtually no odour, Viper Xtrem TR is easy to inject at low temperatures and is approved for use in wet and diamond drilled holes.

## Features and Benefits

- Suitable for cracked concrete
- Suitable for use in diamond drill hole
- Easy to inject at low temperatures
- Reliable performance at temperature -40°C to 80°C
- Virtually no odour
- 410ml cartridge
- High performance injection tool - Reduces effort required for application
- Works in damp, wet and submerged hole
- Minimum shrinkage - Improves long term performance in freeze / thaw cycles
- Intended working life 100 years for rebar
- Fast cure time

## Specification

Viper Xtrem TR is a heavy duty, fast curing vinylester resin.

Setting characteristics at 27°C

- Working time 8 mins, Full cure time 1 hour

## Approvals



**CSTB** fire tested.26074021  
per ISO 834

## Substrates

- Concrete (cracked and non-cracked)
- Hollow block wall
- Solid stone
- Solid block
- Solid brick
- Hollow block
- Hollow brick

## Setting Time

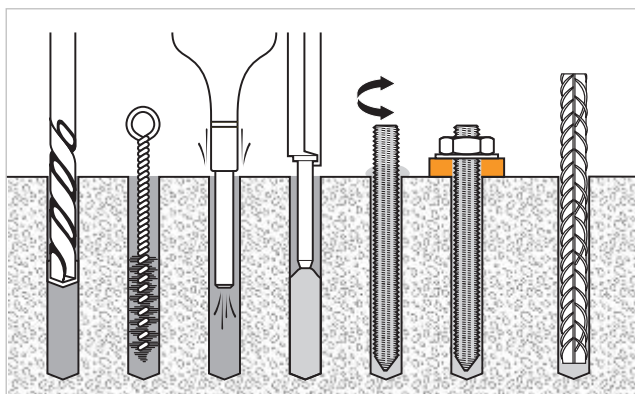
| Ambient Temperature (C°) | Max. time for installation | Curing time |
|--------------------------|----------------------------|-------------|
| 35                       | 4 minutes                  | 1 hours     |
| 30                       | 8 minutes                  | 1 hours     |
| 20                       | 15 minutes                 | 2 hours     |
| 10                       | 40 minutes                 | 3 hours     |
| 5                        | 60 minutes                 | 4 hours     |

## Applications

- Pumps and pipework
- Fixing steel framed structures
- Electric insulation (WRAS Approved product)
- Protective barriers, safety rails
- Rebar installation
- Starter bar installation



## Installation



1. Drill correct diameter hole to recommended depth.
2. Clean hole thoroughly with brush and air pump 3~4 times.
3. Assemble nozzle onto cartridge. Dispense and discard enough chemical until uniform mix is achieved. Inject from the bottom of the hole gradually, filling in until 40% full.
4. Insert the rod/stud/rebar by hand to full depth, using slow rotating movement.
5. Allow Viper Xtrem TR to cure for specified period before loading.

## Product Range - VIPER XTREM TR Resin



| Part No. | Description                                               | Order Qty |
|----------|-----------------------------------------------------------|-----------|
| 060201   | Viper Xtrem TR Cartridge (410ml) + 1 Nozzle + 1 Extension | 1         |
| 050882   | Application Nozzle with Extension (10 nos.)               | 1         |
| 077151   | Viper 410ml Manual Injection Tool                         | 1         |
| 050919   | Pneumatic Injection Tool for Viper                        | 1         |
| 054278   | Electric Injection Tool for Viper                         | 1         |

## VIPER XTREM TR Recommended Working Load in 40 N/mm<sup>2</sup> Non-cracked Concrete - Anchor Studs

| Thread Ø | Hole Ø (mm) | Fixture Hole Ø (mm) | Embedment Depth (mm) | Hole Depth (mm) | Min Thick of Base Material (mm) | Tightening Torque (Nm) | Shear Load (kN) | Tension Load (kN) |
|----------|-------------|---------------------|----------------------|-----------------|---------------------------------|------------------------|-----------------|-------------------|
| M8       | 10          | 9                   | 80                   | 80              | 110                             | 10                     | 4.9             | 9.7               |
| M10      | 12          | 12                  | 90                   | 90              | 120                             | 20                     | 7.8             | 14.9              |
| M12      | 14          | 14                  | 110                  | 110             | 140                             | 30                     | 11.3            | 20.2              |
| M16      | 18          | 18                  | 125                  | 125             | 160                             | 60                     | 21.0            | 24.4              |
| M20      | 25          | 22                  | 170                  | 170             | 220                             | 120                    | 32.7            | 41.7              |
| M24      | 28          | 26                  | 210                  | 210             | 265                             | 200                    | 47.0            | 57.3              |
| M30      | 35          | 33                  | 280                  | 280             | 350                             | 400                    | 74.7            | 83.7              |

\* These are zinc coated studs, for SS studs see full submission

\* Safety factor for all loads = 3

\* This table does not consider edge distance and anchor spacing effects. Please refer to Ramset Design Guide for more information.

\* Recommended shear load is limited by anchor stud grade 8.8 refer to ISO 898-1:2009(E). For loading of other material grade, please contact Ramset Technical Department.

\* Pull out test for single anchor = working load x 1.5

Rebar Fixing with Viper Xtrem TR - for loading and installation, please contact Ramset for full product submission

## ChemSet™ Anchor Studs - Features and Benefits

- Grade 5.8 Carbon Steel - 500 MPa Steel Capacity
- High Corrosion resistant AISI 316(A4) Stainless Steel
- Hot Dip Galvanised to 45µm min
- External Hex Drive for reliable socket fit
- Depth Set Mark to ensure correct embedment
- Beveled tip to prevent unthreading
- High quality finish



## ChemSet™ Anchor Studs - Zinc Plated 6µm minimum 45° Single Cut



| Part No. | Description           | Anchor Size (mm) | Stud Length (mm) | Max Fixture Thickness (mm) | Drilled Hole Ø (mm) | Min Hole Depth (mm) | Order Qty |
|----------|-----------------------|------------------|------------------|----------------------------|---------------------|---------------------|-----------|
| CS08110  | CS08110 Chemset Studs | 8                | 110              | 15                         | 10                  | 80                  | 10        |
| CS10130  | CS10130 Chemset Studs | 10               | 130              | 20                         | 12                  | 90                  | 10        |
| CS12160  | CS12160 Chemset Studs | 12               | 160              | 25                         | 14                  | 110                 | 10        |
| CS16190  | CS16190 Chemset Studs | 16               | 190              | 35                         | 18                  | 125                 | 10        |
| CS20260  | CS20260 Chemset Studs | 20               | 260              | 65                         | 25                  | 170                 | 6         |
| CS24300  | CS24300 Chemset Studs | 24               | 300              | 63                         | 28                  | 210                 | 6         |
| CS30380  | CS30380 Chemset Studs | 30               | 380              | 70                         | 35                  | 280                 | 5         |

## ChemSet™ Anchor Studs - Hot Dipped Galvanised 45µm minimum 45° Single Cut



| Part No.  | Description             | Anchor Size (mm) | Stud Length (mm) | Max Fixture Thickness (mm) | Drilled Hole Ø (mm) | Min Hole Depth (mm) | Order Qty |
|-----------|-------------------------|------------------|------------------|----------------------------|---------------------|---------------------|-----------|
| CS08110GH | CS08110GH Chemset Studs | 8                | 110              | 15                         | 10                  | 80                  | 10        |
| CS10130GH | CS10130GH Chemset Studs | 10               | 130              | 20                         | 12                  | 90                  | 10        |
| CS12160GH | CS12160GH Chemset Studs | 12               | 160              | 25                         | 14                  | 110                 | 10        |
| CS16190GH | CS16190GH Chemset Studs | 16               | 190              | 35                         | 18                  | 125                 | 10        |
| CS20260GH | CS20260GH Chemset Studs | 20               | 260              | 65                         | 25                  | 170                 | 6         |
| CS24300GH | CS24300GH Chemset Studs | 24               | 300              | 63                         | 28                  | 210                 | 6         |
| CS30380GH | CS30380GH Chemset Studs | 30               | 380              | 70                         | 35                  | 280                 | 5         |

## ChemSet™ Anchor Studs - Stainless Steel A4 316 45° Single Cut



| Part No.  | Description             | Anchor Size (mm) | Stud Length (mm) | Max Fixture Thickness (mm) | Drilled Hole Ø (mm) | Min Hole Depth (mm) | Order Qty |
|-----------|-------------------------|------------------|------------------|----------------------------|---------------------|---------------------|-----------|
| CS08110SS | CS08110SS Chemset Studs | 8                | 110              | 15                         | 10                  | 80                  | 10        |
| CS10130SS | CS10130SS Chemset Studs | 10               | 130              | 20                         | 12                  | 90                  | 10        |
| CS12160SS | CS12160SS Chemset Studs | 12               | 160              | 25                         | 14                  | 110                 | 10        |
| CS16190SS | CS16190SS Chemset Studs | 16               | 190              | 35                         | 18                  | 125                 | 10        |
| CS20260SS | CS20260SS Chemset Studs | 20               | 260              | 65                         | 25                  | 170                 | 6         |
| CS24300SS | CS24300SS Chemset Studs | 24               | 300              | 63                         | 28                  | 210                 | 6         |
| CS30380SS | CS30380SS Chemset Studs | 30               | 380              | 70                         | 35                  | 280                 | 5         |

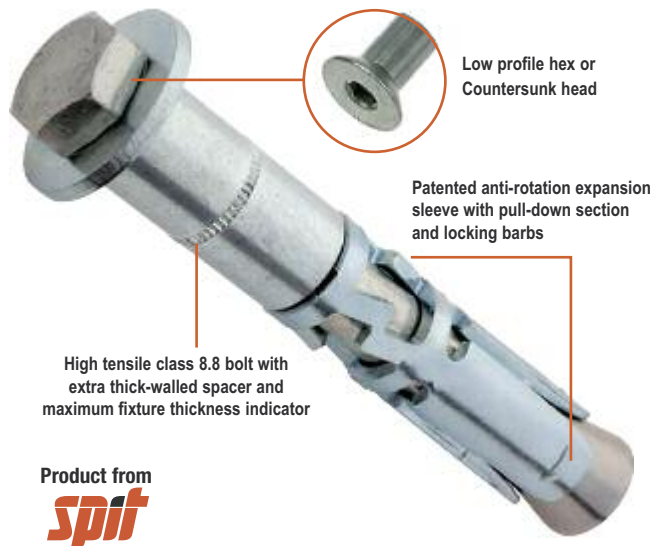
Lead time applies for Chemset™ Anchor Studs. Note: A4-70, A4-80 and Grade 8.8 are available for selection.

## ATP Stainless Steel A4 Internal Threaded Socket (to match Epcon C8/Viper Xtrem TR)



| Part No. | Description           | Anchor Size (mm) | Anchor Length (mm) | Drilled Hole Ø (mm) | Drilling Depth (mm) | Thread Length (mm) | Order Qty |
|----------|-----------------------|------------------|--------------------|---------------------|---------------------|--------------------|-----------|
| 062860   | ATP Socket M8X60 A4   | 8                | 60                 | 14                  | 80                  | 25                 | 10        |
| 062960   | ATP Socket M10X65 A4  | 10               | 65                 | 20                  | 90                  | 32                 | 10        |
| 063100   | ATP Socket M12X75 A4  | 12               | 75                 | 24                  | 210                 | 38                 | 10        |
| 051175   | ATP Socket M16X125 A4 | 16               | 125                | 28                  | 280                 | 50                 | 10        |

## Notes



Product from  
**spit**

## Approvals



ETA Option 1  
no 05/0044



TR 020



C1/C2  
Seismic approval

## Performance Related



Dynamic  
Load



Pull down



Cracked  
Concrete



Fire  
Resistant



Seismic

## Material Specification



Zinc Plated



Stainless  
Steel

## Features and Benefits

- ETA Option 1 - cracked concrete & seismic zone
- Heavy duty torque controlled anchors for use in concrete over 20MPa
- Through fixing – no marking out and repositioning
- Fully assembled
- Variety of head styles for perfect finishing
- Sleeved through bolt anchor - very high shear loads
- Achieves high pull-out and pull-down force values
- High performance for fixture clamping
- High shear and tensile capacity, Grade 8.8 steel bolt and threaded rod
- Metal “collapse system” sleeve. Patented Z shaped anti-rotation and Z shape shearing
- The patented anti-rotation expansion sleeve is designed with sharp angled protrusions that grip the sides of the hole, preventing anchor rotation during installation. As expansion of the sleeve begins, the locking barbs also grip the sides of the hole, further embedding as expansion progresses, giving extra holding power. The sleeve pulls down during tightening ensuring excellent pressure between the fixture and the concrete.
- The low profile hex or countersunk heads provide a neat finish

## Substrates

- Concrete (cracked and non-cracked)
- Hard natural stone

## Description

The TRIGA Z XTREM Anchor is a heavy duty, torque controlled expansion anchor, with an integrated pull-down section, designed for high performance in both static and dynamic load applications, in both cracked and non-cracked concrete. The TRIGA Z XTREM Anchor is ideally suited for through fixing into concrete when security and reliability are paramount.

## Typical Applications

- Structural steel columns
- Steel beams
- Holding down machinery
- Steel bollards
- Industrial doors
- Fixing of pre-cast units



## TRIGA Z XTREM Collapse System



During collapse, the Z shapes shears, which enables the upper part of the anchor to move down (bolt, washer and tube). The special Z shape of Triga Z anchors ensures that fixtures are always fit snugly.

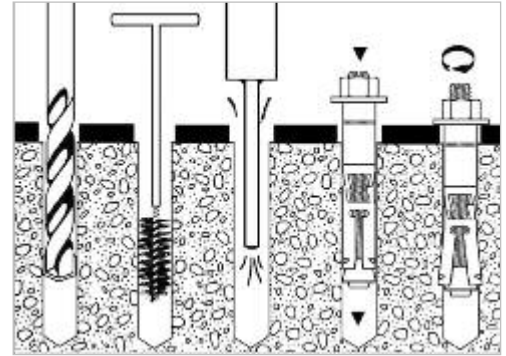


PATENTED  
N° EP1211430  
BREVETÉ



## Installation

1. Drill the correct diameter hole to the same diameter as the TRIGA Z XTREM stud anchor selected.
2. Remove debris from hole by blowing out with compressed air or hand held blow out pump.
3. Install the anchor in the hole with a hammer until washer seats on fixture.
4. Tighten bolt with a torque wrench to recommended assembly torque



## TRIGA Z XTREM Zinc Plated - Recommended Working Loads in 40N/mm<sup>2</sup> non-cracked Concrete

| Thread<br>Ø | Embedment<br>Depth (mm) | Torque<br>(Nm) | Stud Head           |                       | Bolt Head & Countersunk |                       |
|-------------|-------------------------|----------------|---------------------|-----------------------|-------------------------|-----------------------|
|             |                         |                | Shear Load<br>(kN)* | Tension Load<br>(kN)* | Shear Load<br>(kN)*     | Tension Load<br>(kN)* |
| M6          | 50                      | 15             | -                   | -                     | 7.5                     | 5.4                   |
| M8          | 60                      | 25             | 6.3                 | 8.4                   | 10.9                    | 8.4                   |
| M10         | 70                      | 50             | 10.3                | 12.4                  | 16.4                    | 12.4                  |
| M12         | 80                      | 80             | 15.8                | 15.2                  | 24.3                    | 15.2                  |
| M16         | 100                     | 120            | 31.0                | 21.3                  | 39.1                    | 21.3                  |
| M20         | 125                     | 200            | 36.6                | 29.7                  | 57.8                    | 29.7                  |

\* Safety factor for all loads = 3

\* This table does not consider edge distance and anchor spacing effects. Please refer to Ramset Design Guide for more information.

\* Pull out test for single anchor = working load x 1.5

## TRIGA Z XTREM Bolt Head - Zinc Plated



### Bolt version

- The conventional version, for sleek fixing.

| Part No. | Description | Thread<br>Ø | Max Fixture<br>Thickness (mm) | Fixture Clearance<br>Hole Ø (mm) | Overall Anchor<br>Length (mm) | Drilled Hole<br>Ø (mm) | Min Hole<br>Depth (mm) | Order<br>Qty | Seismic<br>Approval |
|----------|-------------|-------------|-------------------------------|----------------------------------|-------------------------------|------------------------|------------------------|--------------|---------------------|
| 050673   | V6-10/5     | M6          | 5                             | 12                               | 65                            | 10                     | 70                     | 100          | -                   |
| 050674   | V6-10/20    | M6          | 20                            | 12                               | 80                            | 10                     | 70                     | 100          | -                   |
| 050678   | V8-12/10    | M8          | 10                            | 14                               | 80                            | 12                     | 80                     | 50           | -                   |
| 050679   | V8-12/20    | M8          | 20                            | 14                               | 90                            | 12                     | 80                     | 50           | -                   |
| 053001   | V8-12/50    | M8          | 50                            | 14                               | 120                           | 12                     | 80                     | 50           | -                   |
| 050688   | V10-15/10   | M10         | 10                            | 17                               | 95                            | 15                     | 90                     | 25           | C1/C2               |
| 050689   | V10-15/20   | M10         | 20                            | 17                               | 105                           | 15                     | 90                     | 25           | C1/C2               |
| 053003   | V10-15/55   | M10         | 55                            | 17                               | 140                           | 15                     | 90                     | 25           | C1/C2               |
| 050696   | V12-18/10   | M12         | 10                            | 20                               | 105                           | 18                     | 105                    | 25           | C1/C2               |
| 050697   | V12-18/25   | M12         | 25                            | 20                               | 120                           | 18                     | 105                    | 25           | C1/C2               |
| 053004   | V12-18/55   | M12         | 55                            | 20                               | 150                           | 18                     | 105                    | 25           | C1/C2               |
| 050704   | V16-24/10   | M16         | 10                            | 26                               | 130                           | 24                     | 131                    | 10           | C1/C2               |
| 050705   | V16-24/25   | M16         | 25                            | 26                               | 145                           | 24                     | 131                    | 10           | C1/C2               |
| 050710   | V16-24/50   | M16         | 50                            | 26                               | 170                           | 24                     | 131                    | 10           | C1/C2               |
| 050711   | V20-28/25   | M20         | 25                            | 31                               | 170                           | 28                     | 157                    | 5            | -                   |

## TRIGA Z XTREM Stud Head - Zinc Plated



### Stud Head version

- For removable fixing.

| Part No. | Description | Thread Ø | Max Fixture Thickness (mm) | Fixture Clearance Hole Ø (mm) | Overall Anchor Length (mm) | Drilled Hole Ø (mm) | Min Hole Depth (mm) | Order Qty | Seismic Approval |
|----------|-------------|----------|----------------------------|-------------------------------|----------------------------|---------------------|---------------------|-----------|------------------|
| 050681   | E8-12/20    | M8       | 20                         | 14                            | 99                         | 12                  | 80                  | 50        | -                |
| 050684   | E8-12/55    | M8       | 55                         | 14                            | 134                        | 12                  | 80                  | 50        | -                |
| 050691   | E10-15/20   | M10      | 20                         | 17                            | 114                        | 15                  | 90                  | 25        | C1/C2            |
| 050692   | E10-15/35   | M10      | 35                         | 17                            | 129                        | 15                  | 90                  | 25        | C1/C2            |
| 050693   | E10-15/55   | M10      | 55                         | 17                            | 149                        | 15                  | 90                  | 25        | C1/C2            |
| 050698   | E12-18/25   | M12      | 25                         | 20                            | 132                        | 18                  | 105                 | 25        | C1/C2            |
| 050699   | E12-18/45   | M12      | 45                         | 20                            | 152                        | 18                  | 105                 | 20        | C1/C2            |
| 050701   | E12-18/65   | M12      | 65                         | 20                            | 172                        | 18                  | 105                 | 10        | C1/C2            |
| 050702   | E12-18/100  | M12      | 100                        | 20                            | 207                        | 18                  | 105                 | 10        | C1/C2            |
| 050706   | E16-24/25   | M16      | 25                         | 26                            | 159                        | 24                  | 131                 | 10        | C1/C2            |
| 050707   | E16-24/55   | M16      | 55                         | 26                            | 189                        | 24                  | 131                 | 5         | C1/C2            |
| 050708   | E16-24/100  | M16      | 100                        | 26                            | 234                        | 24                  | 131                 | 5         | C1/C2            |
| 050712   | E20-28/25   | M20      | 25                         | 31                            | 192                        | 28                  | 157                 | 5         | -                |
| 050713   | E20-28/60   | M20      | 60                         | 31                            | 227                        | 28                  | 157                 | 5         | -                |
| 050714   | E20-28/100  | M20      | 100                        | 31                            | 267                        | 28                  | 157                 | 5         | -                |

## TRIGA Z XTREM Countersunk Head - Zinc Plated



### Countersunk version

- Flush the surface

| Part No. | Description  | Thread Ø | Max Fixture Thickness (mm) | Fixture Clearance Hole Ø (mm) | Overall Anchor Length (mm) | Drilled Hole Ø (mm) | Min Hole Depth (mm) | Order Qty | Seismic Approval |
|----------|--------------|----------|----------------------------|-------------------------------|----------------------------|---------------------|---------------------|-----------|------------------|
| 050686   | TF V8-12/16  | M8       | 16                         | 14                            | 85                         | 12                  | 80                  | 50        | -                |
| 053002   | TF V8-12/26  | M8       | 26                         | 14                            | 95                         | 12                  | 80                  | 50        | -                |
| 050695   | TF V10-15/27 | M10      | 27                         | 17                            | 105                        | 15                  | 90                  | 25        | C1/C2            |
| 050715   | TF V12-18/40 | M12      | 40                         | 20                            | 130                        | 18                  | 105                 | 10        | -                |

## TRIGA Z Stainless Steel A4 - Recommended Working Loads in 40N/mm<sup>2</sup> non-cracked Concrete

| Thread<br>Ø | Embedment<br>Depth (mm) | Torque<br>(Nm) | Stud Head           |                       | Bolt Head           |                       |
|-------------|-------------------------|----------------|---------------------|-----------------------|---------------------|-----------------------|
|             |                         |                | Shear Load<br>(kN)* | Tension Load<br>(kN)* | Shear Load<br>(kN)* | Tension Load<br>(kN)* |
| M6          | 50                      | 10             |                     |                       | 7.2                 | 5.0                   |
| M8          | 60                      | 25             | 5.5                 | 6.7                   | 10.5                | 6.3                   |
| M10         | 70                      | 50             | 9.1                 | 8.4                   | 16.4                | 8.4                   |
| M12         | 80                      | 80             | 13.8                | 10.5                  | 20.0                | 10.5                  |
| M16         | 95                      | 120            | 27.1                | 19.6                  |                     |                       |

\* Safety factor for all loads = 3  
 \* This table does not consider edge distance and anchor spacing effects. Please refer to Ramset Design Guide for more information.  
 \* Pull out test for single anchor = working load x 1.5

## TRIGA Z Bolt Head - Stainless Steel A4



| Part No. | Description  | Thread<br>Ø | Max Fixture<br>Thickness (mm) | Fixture Hole<br>Ø (mm) | Overall Anchor<br>Length (mm) | Drilled Hole<br>Ø (mm) | Min Hole<br>Depth (mm) | Order<br>Qty |
|----------|--------------|-------------|-------------------------------|------------------------|-------------------------------|------------------------|------------------------|--------------|
| 050596   | V8-12/30 A4  | M8          | 30                            | 14                     | 100                           | 12                     | 80                     | 25           |
| 050601   | V10-15/25 A4 | M10         | 25                            | 17                     | 115                           | 15                     | 90                     | 25           |
| 050605   | V12-18/25 A4 | M12         | 25                            | 20                     | 120                           | 18                     | 105                    | 25           |

## TRIGA Z Stud Head - Stainless Steel A4



| Part No. | Description  | Thread<br>Ø | Max Fixture<br>Thickness (mm) | Fixture Hole<br>Ø (mm) | Overall Anchor<br>Length (mm) | Drilled Hole<br>Ø (mm) | Min Hole<br>Depth (mm) | Order<br>Qty |
|----------|--------------|-------------|-------------------------------|------------------------|-------------------------------|------------------------|------------------------|--------------|
| 050598   | E8-12/45 A4  | M8          | 45                            | 14                     | 124                           | 12                     | 80                     | 50           |
| 050604   | E10-15/45 A4 | M10         | 45                            | 17                     | 139                           | 15                     | 90                     | 25           |
| 050608   | E12-18/45 A4 | M12         | 45                            | 20                     | 152                           | 18                     | 105                    | 20           |
| 052940   | E16-24/25 A4 | M16         | 25                            | 26                     | 157                           | 24                     | 130                    | 10           |

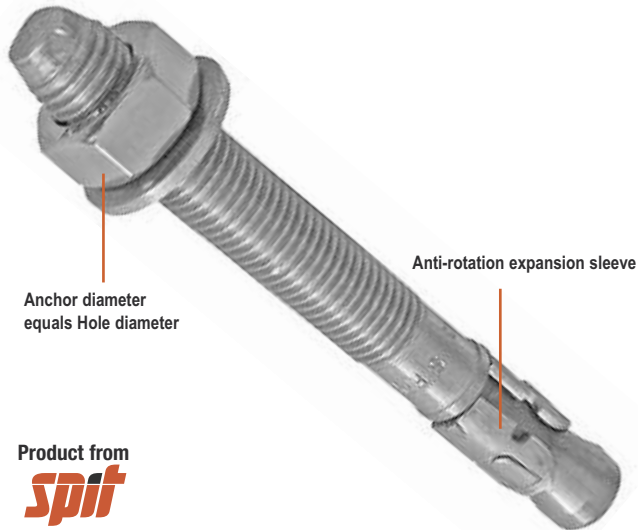
## TRIGA Z Countersunk Head - Stainless Steel A4



### Countersunk version

- Flush the surface

| Part No. | Description    | Thread<br>Ø | Max Fixture<br>Thickness (mm) | Fixture Hole<br>Ø (mm) | Overall Anchor<br>Length (mm) | Drilled Hole<br>Ø (mm) | Min Hole<br>Depth (mm) | Order<br>Qty |
|----------|----------------|-------------|-------------------------------|------------------------|-------------------------------|------------------------|------------------------|--------------|
| 057902   | TF V8-12/30 A4 | M8          | 30                            | 14                     | 100                           | 12                     | 80                     | 50           |



## Approvals



ETA Option 1  
no 04/0010  
(FIX Z A4)



TR 020



C1/C2  
Seismic approval  
FIX Z XTREM

## Performance Related



Dynamic  
Load



Pull down



Cracked  
Concrete



Fire  
Resistant



Seismic

## Material Specification



Zinc Plated



Stainless  
Steel

## Description

The FIX Z XTREM Stud Anchor is a true-to-size, heavy duty, torque controlled expansion anchor, for permanent anchoring into standard and hard concrete. Designed for heavy duty anchoring in cracked and non-cracked concrete. Suitable for seismic and fire environments.

## Features and Benefits

- 3 legs clip for a better expansion
- 6 lugs for a better fixing in concrete
- Improved efficiency with fewer hammer blows and turns for installation
- "Pull down" capabilities for secure fixings

## Substrates

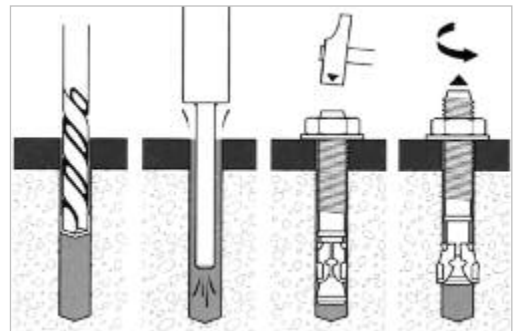
- Concrete (cracked and non-cracked), Solid Stone (applicable with care)

## Installation

1. Drill the correct diameter hole to the same diameter as the FIX Z XTREM stud anchor selected.
2. Remove debris from hole by blowing out with compressed air or hand held blow out pump.
3. Install the anchor in the hole with a hammer until washer seats on fixture.
4. Tighten bolt with a torque wrench to recommended assembly torque.

## Typical Applications

- Structural beams and columns
- Load bearing zones
- Cable trays
- Overhead piping
- Air condition ducts
- Securing of machines and equipment
- Tie back brackets for façade



## FIX Z XTREM - Zinc Plated - Recommended Working Loads in 40N/mm<sup>2</sup> non-cracked Concrete

| Thread Ø | Embedment Depth (mm) | Torque (Nm) | Shear Load (kN)* | Tension Load (kN)* |
|----------|----------------------|-------------|------------------|--------------------|
| M8       | 46                   | 20          | 5.4              | 3.8                |
| M10      | 60                   | 45          | 5.3              | 8.4                |
| M12      | 70                   | 60          | 7.7              | 12.5               |
| M16      | 85                   | 110         | 15.2             | 16.6               |
| M20      | 100                  | 160         | 20.4             | 20.7               |

\* Safety factor for all loads = 3

\* This table does not consider edge distance and anchor spacing effects. Please refer to Ramset Design Guide for more information.

\* Pull out test for single anchor = working load x 1.5



## FIX Z XTREM Stud Anchors - Zinc Plated



| Part No. | Description    | Thread Ø | Max Fixture Thickness (mm)* | Fixture Clearance Hole Ø (mm) | Overall Anchor Length (mm) | Drilled Hole Ø (mm) | Min Hole Depth (mm)* | Order Qty | Seismic Approval |
|----------|----------------|----------|-----------------------------|-------------------------------|----------------------------|---------------------|----------------------|-----------|------------------|
| 057763   | M8x65/5        | M8       | 5                           | 9                             | 65                         | 8                   | 65                   | 100       | C1               |
| 057764   | M8x75/15       | M8       | 15                          | 9                             | 75                         | 8                   | 65                   | 100       | C1               |
| 057765   | M8x90/30       | M8       | 30                          | 9                             | 90                         | 8                   | 65                   | 50        | C1               |
| 057766   | M8x120/60      | M8       | 60                          | 9                             | 120                        | 8                   | 65                   | 50        | C1               |
| 057768   | M10x85/25-5    | M10      | 25                          | 12                            | 85                         | 10                  | 55                   | 50        | C1/C2            |
| 057769   | M10x90/30-10   | M10      | 30                          | 12                            | 90                         | 10                  | 55                   | 50        | C1/C2            |
| 057771   | M10x120/60-40  | M10      | 60                          | 12                            | 120                        | 10                  | 55                   | 25        | C1/C2            |
| 057773   | M10x160/100-80 | M10      | 100                         | 12                            | 160                        | 10                  | 55                   | 25        | C1/C2            |
| 057775   | M12x105/30-10  | M12      | 30                          | 14                            | 105                        | 12                  | 70                   | 25        | C1/C2            |
| 057776   | M12x115/40-20  | M12      | 40                          | 14                            | 115                        | 12                  | 70                   | 25        | C1/C2            |
| 057777   | M12x135/60-40  | M12      | 60                          | 14                            | 135                        | 12                  | 70                   | 25        | C1/C2            |
| 057779   | M12x180/105-85 | M12      | 105                         | 14                            | 180                        | 12                  | 70                   | 25        | C1/C2            |
| 057781   | M16x145/45-25  | M16      | 45                          | 18                            | 145                        | 16                  | 90                   | 10        | C1/C2            |
| 057782   | M16x170/70-50  | M16      | 70                          | 18                            | 170                        | 16                  | 90                   | 10        | C1/C2            |
| 057783   | M16x180/80-60  | M16      | 80                          | 18                            | 180                        | 16                  | 90                   | 10        | C1/C2            |
| 057785   | M20x170/30     | M20      | 30                          | 22                            | 170                        | 20                  | 130                  | 10        | C1/C2            |
| 057787   | M20x220/80     | M20      | 80                          | 22                            | 220                        | 20                  | 130                  | 10        | C1/C2            |

\* Data based on minimum anchor depth

## FIX Z XTREM A4 Stainless Steel - Recommended Working Loads in 40N/mm<sup>2</sup> non-cracked Concrete

| Thread Ø | Embedment Depth (mm) | Torque (Nm) | Shear Load (kN)* | Tension Load (kN)* |
|----------|----------------------|-------------|------------------|--------------------|
| M8       | 48                   | 20          | 4.1              | 5.1                |
| M10      | 58                   | 35          | 6.4              | 8.4                |
| M12      | 70                   | 50          | 9.6              | 12.1               |
| M16      | 86                   | 100         | 17.3             | 16.3               |

\* Safety factor for all loads = 3

\* This table does not consider edge distance and anchor spacing effects. Please refer to Ramset Design Guide for more information.

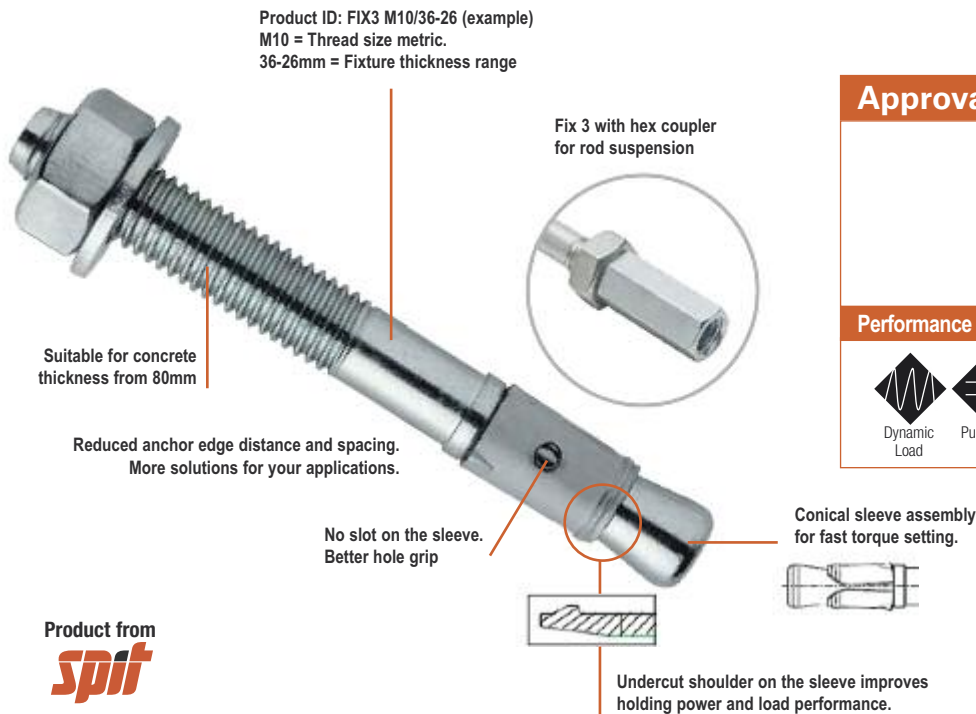
\* Pull out test for single anchor = working load x 1.5

## FIX Z XTREM A4 Stud Anchors - Stainless Steel



| Part No. | Description    | Thread Ø | Max Fixture Thickness (mm)* | Fixture Clearance Hole Ø (mm) | Overall Anchor Length (mm) | Drilled Hole Ø (mm) | Min Hole Depth (mm)* | Order Qty |
|----------|----------------|----------|-----------------------------|-------------------------------|----------------------------|---------------------|----------------------|-----------|
| 058616   | M8x55/5 A4     | M8       | 5                           | 9                             | 55                         | 8                   | 52                   | 100       |
| 058617   | M8x70/20-7 A4  | M8       | 20                          | 9                             | 70                         | 8                   | 52                   | 100       |
| 058618   | M8x90/40-27 A4 | M8       | 40                          | 9                             | 90                         | 8                   | 52                   | 100       |
| 058619   | M10x70/10      | M10      | 10                          | 12                            | 70                         | 10                  | 55                   | 50        |
| 058620   | M10x95/35-15   | M10      | 35                          | 12                            | 95                         | 10                  | 55                   | 50        |
| 058621   | M10x105/45-25  | M10      | 45                          | 12                            | 105                        | 10                  | 55                   | 50        |
| 058622   | M10x130/70-50  | M10      | 70                          | 14                            | 130                        | 12                  | 55                   | 25        |
| 058623   | M12x95/20      | M12      | 20                          | 14                            | 95                         | 12                  | 70                   | 25        |
| 058624   | M12x110/35-15  | M12      | 35                          | 14                            | 110                        | 12                  | 70                   | 25        |
| 058625   | M12x120/45-25  | M12      | 45                          | 14                            | 120                        | 12                  | 70                   | 25        |
| 058626   | M12x140/65-45  | M12      | 65                          | 18                            | 140                        | 16                  | 70                   | 25        |
| 058627   | M16x120/20     | M16      | 20                          | 18                            | 120                        | 16                  | 90                   | 20        |
| 058628   | M16x140/40-20  | M16      | 40                          | 18                            | 140                        | 16                  | 90                   | 10        |

\* Data based on minimum anchor depth



## Approvals



ETA Option 7  
no.13/0005

### Performance Related



Dynamic Load



Pull down



Fire Resistant

### Material Specification



Zinc Plated

## Description

The Fix 3™ Stud Anchor is a true-to-size, heavy duty, multi purpose expansion anchor, for permanent anchoring into concrete. Designed for heavy duty anchoring in non cracked concrete where reduced edge distance and anchor spacing is required. Undercut shoulder on the sleeve improves hole grip and increases load performance.

## Features and Benefits

- The Fix 3™ Stud Anchor diameter equals the required hole diameter providing maximum shear capacity for hole size and making drill bit selection simple. Anchor design provides superior strength and reliability.
- The anchor design ensures maximum expansion of the sleeve and pull-down on the fixture. These actions are both further assisted by the application of load.
- The anti-rotation expansion sleeve is designed to grip the sides of the hole, preventing anchor rotation during installation.
- Use threaded couplers where rod suspension applications are required.
- Suitable for installation in concrete from 80mm thick such as pre-fabricated concrete panels.

## Substrates

- Concrete

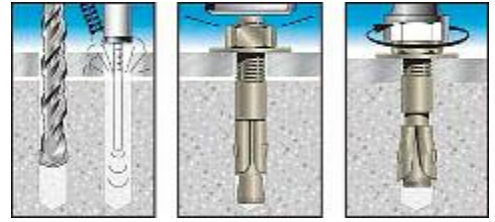
## Typical Applications

- Installing curtain walls, balustrades & barriers
- Anchoring elevator guide rails
- Anchoring structural steel columns/beams
- Stadium seating & Pallet racking
- Overhead suspension & Anchoring



## Installation

1. Drill a hole to the recommended diameter and depth using the fixture as a template. Clean the hole thoroughly with a hole cleaning brush. Remove the debris with a hand pump, compressed air, or vacuum.
2. Insert the anchor through the fixture and drive with a hammer until the washer contacts the fixture.
3. Tighten the nut with a torque wrench to the specified assembly torque.



## Fix 3™ Zn Plated - Recommended Working Loads in 40N/mm<sup>2</sup> non-cracked Concrete

| Thread Ø | Embedment Depth (mm) | Tightening Torque (Nm) | Shear Load (kN)* | Tension Load (kN)* |
|----------|----------------------|------------------------|------------------|--------------------|
| M8       | 40                   | 15                     | 3.3              | 5.4                |
| M10      | 50                   | 30                     | 4.6              | 7.5                |
| M12      | 65                   | 50                     | 9.1              | 11.1               |
| M16      | 80                   | 100                    | 12.2             | 15.2               |
| M20      | 100                  | 160                    | 23.7             | 21.3               |

\* Safety factor for all loads = 3

\* This table does not consider edge distance and anchor spacing effects. Please refer to Ramset Design Guide for more information.

\* Pull out test for single anchor = working load x 1.5

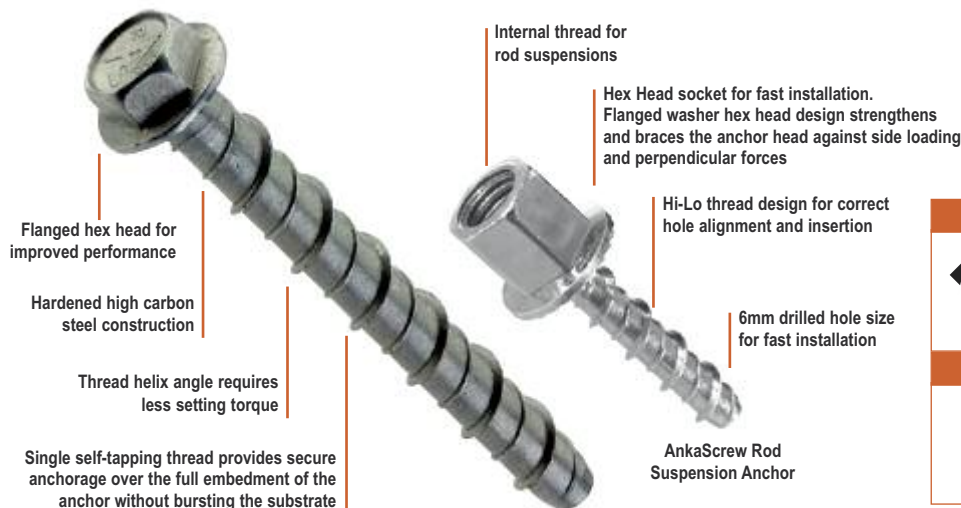
## Fix 3™ Stud Anchor - Hex Nut - Zinc Plated



| Part No | Description    | Thread Ø | Max Fixture* Thickness (mm) | Fixture Clearance Hole Ø (mm) | Overall Anchor Length (mm) | Drilled Hole Ø (mm) | Min Hole Depth (mm) | Order Qty |
|---------|----------------|----------|-----------------------------|-------------------------------|----------------------------|---------------------|---------------------|-----------|
| 057450  | M8x55/5        | M8       | 5                           | 9                             | 55                         | 8                   | 50                  | 100       |
| 057451  | M8x70/20-10    | M8       | 20                          | 9                             | 70                         | 8                   | 50                  | 100       |
| 057452  | M8x90/40-30    | M8       | 40                          | 9                             | 90                         | 8                   | 50                  | 50        |
| 057455  | M8x130/80-70   | M8       | 80                          | 9                             | 130                        | 8                   | 50                  | 50        |
| 057461  | M10x75/15-5    | M10      | 15                          | 12                            | 75                         | 10                  | 60                  | 50        |
| 057463  | M10x95/36-26   | M10      | 36                          | 12                            | 95                         | 10                  | 60                  | 50        |
| 057465  | M10x125/65-55  | M10      | 65                          | 12                            | 125                        | 10                  | 60                  | 25        |
| 057467  | M10x160/100-90 | M10      | 100                         | 12                            | 160                        | 10                  | 60                  | 25        |
| 057470  | M12x80/5       | M12      | 5                           | 14                            | 80                         | 12                  | 75                  | 25        |
| 057471  | M12x100/25-10  | M12      | 25                          | 14                            | 100                        | 12                  | 75                  | 25        |
| 057472  | M12x115/40-25  | M12      | 40                          | 14                            | 115                        | 12                  | 75                  | 25        |
| 057474  | M12x140/65-50  | M12      | 65                          | 14                            | 140                        | 12                  | 75                  | 25        |
| 057477  | M12x220/145-30 | M12      | 145                         | 14                            | 220                        | 12                  | 75                  | 20        |
| 057480  | M16x100/5      | M16      | 5                           | 18                            | 100                        | 16                  | 95                  | 20        |
| 057481  | M16x125/30-15  | M16      | 30                          | 18                            | 125                        | 16                  | 95                  | 20        |
| 057482  | M16x150/55-40  | M16      | 55                          | 18                            | 150                        | 16                  | 95                  | 10        |
| 057483  | M16x170/75-60  | M16      | 75                          | 18                            | 170                        | 16                  | 95                  | 10        |
| 057484  | M16x185/90-75  | M16      | 90                          | 18                            | 185                        | 16                  | 95                  | 10        |
| 057490  | M20x150/10     | M20      | 10                          | 22                            | 150                        | 20                  | 130                 | 10        |
| 057491  | M20x170/30     | M20      | 30                          | 22                            | 170                        | 20                  | 130                 | 10        |
| 057492  | M20x220/80     | M20      | 80                          | 22                            | 220                        | 20                  | 130                 | 10        |

\* Data based on minimum anchor depth

For hot-dip galvanized stud anchor, please consult Technical Department for anchor proposal.



| Performance Related                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |  |
| Dynamic Load                                                                        | Pull down                                                                           | Close to edge                                                                       | Fire Resistant                                                                      | Removable Temporary                                                                 |
| Material Specification                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|  |  |  |                                                                                     |                                                                                     |
| Zinc Plated                                                                         | Mechanical Galvanised                                                               | Stainless Steel                                                                     |                                                                                     |                                                                                     |

## Description

The AnkaScrew™ Screw-In Anchor is a totally removable, medium duty, rotation setting, thread forming anchor, ideal for either temporary or permanent anchoring into substrates such as concrete, brick, hollow brick or block. The AnkaScrew™ is particularly well suited to close-to-edge or close-to-anchor fixing as it does not expand and burst the surrounding substrate

## Features and Benefits

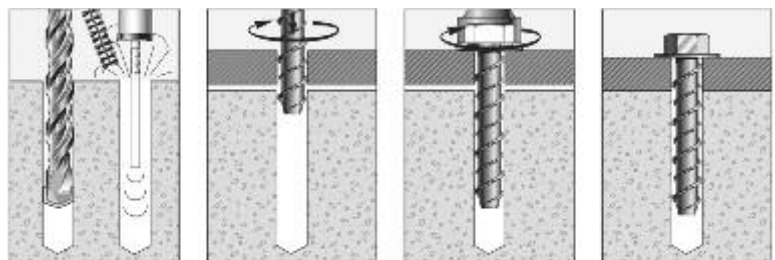
- New WERCS thread allows fast and easy to install as it simply screws into a pre-drilled hole
- Screw out leaving an empty hole without protruding metal part to grind off
- Does not expand and burst concrete which allows close to edge installation

## Substrates

- Concrete
- Solid brick / block
- Hollow brick / block
- Hollow slab

## Installation

1. Drill hole to correct diameter and depth. Clean thoroughly with brush. Remove debris by way of vacuum or hand pump, compress air etc.
2. Using a socket wrench, screw the AnkaScrew™ into the hole using slight pressure until the self tapping action starts.
3. Tighten the AnkaScrew™ until the fixture is held firm. If resistance is experienced when tightening, unscrew the anchor one turn and re-tighten. Ensure that you do not over tighten.
4. For optimum performance, a torque wrench should be used.



## Typical Applications

- Pallet racking
- Temporary safety barriers
- Conveyors
- Pipe brackets
- Gate hinges into brickwork
- Temporary hand rails
- Bottom plates



## AnkaScrew™ Screw-In Anchors - Recommended Working Loads in 40N/mm<sup>2</sup> non-cracked Concrete

| Anchor Size<br>Hole Ø (mm) | Embedment<br>Depth (mm) | Shear Load<br>(kN)* | Tensile Load<br>(kN)* |
|----------------------------|-------------------------|---------------------|-----------------------|
| 6                          | 45                      | 4.5                 | 3.8                   |
| 8                          | 60                      | 8.4                 | 6.1                   |
| 10                         | 75                      | 13.8                | 9.1                   |
| 12                         | 90                      | 16.7                | 13.3                  |
| 16                         | 120                     | 30.8                | 23.1                  |

\* Safety factor for all loads = 3

\* This table does not consider edge distance and anchor spacing effects. Please refer to Ramset Design Guide for more information.

\* Pull out test for single anchor = working load x 1.5

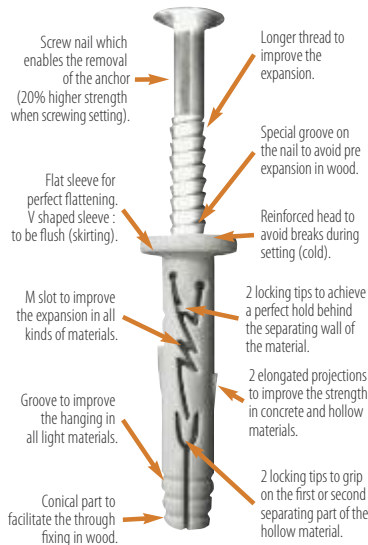
## AnkaScrew™ WERCS Thread Screw-In Anchors - Mechanically Galvanised

| Part No.   | Anchor<br>Diameter<br>(mm) | Anchor<br>Length<br>(mm) | Maximum<br>Fixture Thickness<br>(mm) | Hole<br>Ø<br>(mm) | Hole<br>Depth<br>(mm) | Fixture<br>Hole Diameter<br>(mm) | Order Qty |
|------------|----------------------------|--------------------------|--------------------------------------|-------------------|-----------------------|----------------------------------|-----------|
| AS06050WGM | 6                          | 50                       | 20                                   | 6                 | 60                    | 8                                | 100       |
| AS06075WGM | 6                          | 75                       | 45                                   | 6                 | 65                    | 8                                | 100       |
| AS06100WGM | 6                          | 100                      | 70                                   | 6                 | 65                    | 8                                | 100       |
| AS08060WGM | 8                          | 60                       | 20                                   | 8                 | 75                    | 10                               | 100       |
| AS08075WGM | 8                          | 75                       | 35                                   | 8                 | 75                    | 10                               | 100       |
| AS08100WGM | 8                          | 100                      | 60                                   | 8                 | 80                    | 10                               | 100       |
| AS10060WGM | 10                         | 60                       | 10                                   | 10                | 80                    | 12                               | 50        |
| AS10075WGM | 10                         | 75                       | 25                                   | 10                | 85                    | 12                               | 50        |
| AS10100WGM | 10                         | 100                      | 50                                   | 10                | 95                    | 12                               | 50        |
| AS12075WGM | 12                         | 75                       | 15                                   | 12                | 95                    | 15                               | 50        |
| AS12100WGM | 12                         | 100                      | 40                                   | 12                | 110                   | 15                               | 50        |
| AS12150WGM | 12                         | 150                      | 90                                   | 12                | 110                   | 15                               | 20        |

\* Stainless steel Ankascrew is available upon request. Lead time applies.

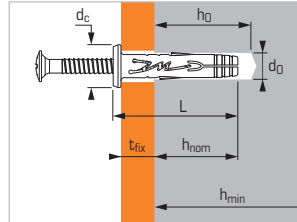
## AnkaScrew™ Screw-In Anchors - Zinc Plated

| Part No. | Anchor<br>Diameter<br>(mm) | Anchor<br>Length<br>(mm) | Maximum<br>Fixture Thickness<br>(mm) | Hole<br>Ø<br>(mm) | Hole<br>Depth<br>(mm) | Fixture<br>Hole Diameter<br>(mm) | Order Qty |
|----------|----------------------------|--------------------------|--------------------------------------|-------------------|-----------------------|----------------------------------|-----------|
| AS16115  | 16                         | 115                      | 40                                   | 16                | 130                   | 19                               | 20        |
| AS16160  | 16                         | 160                      | 85                                   | 16                | 140                   | 19                               | 20        |



## Description

Hammer-set anchor for light duty fixings for concrete and all materials types



ETAG 014 - 06/0032

## Technical Data

| Part No.          | Anchor Size        | Embedment Depth       | Max thickness of part to be fixed | Drilling depth through part to be fixed | Drilling depth in base material | Drilling Diameter   | Min Thickness of base material | Cylinder Head diameter | Total Anchor length | Type of nail | Order Qty |
|-------------------|--------------------|-----------------------|-----------------------------------|-----------------------------------------|---------------------------------|---------------------|--------------------------------|------------------------|---------------------|--------------|-----------|
| Zinc Coated Steel | Stainless Steel A4 | (mm) h <sub>mon</sub> | (mm) t <sub>fix</sub>             | (mm) L+8                                | (mm) h <sub>0</sub>             | (mm) d <sub>0</sub> | (mm) h <sub>min</sub>          | (mm) d <sub>c</sub>    | (mm) L              |              |           |
| 050116            | -                  | 5X25/5 P              | 20                                | 5                                       | 35                              | 30                  | 5                              | 100                    | 9                   | 27           | PZ2 200   |
| 050117            | -                  | 5X25/15 P             | 20                                | 15                                      | 45                              | 30                  | 5                              | 100                    | 9                   | 37           | PZ2 200   |
| 050118            | 060104             | 6X30/5 P              | 25                                | 5                                       | 40                              | 35                  | 6                              | 100                    | 11                  | 32           | PZ2 200   |
| 050119            | -                  | 6X40/12 P             | 25                                | 12                                      | 47                              | 35                  | 6                              | 100                    | 11                  | 39           | PZ2 100   |
| 050121            | 060105             | 6X50/25 P             | 25                                | 25                                      | 60                              | 35                  | 6                              | 100                    | 11                  | 52           | PZ2 100   |
| 050116            | 060106             | 6X65/40 P             | 25                                | 40                                      | 75                              | 35                  | 6                              | 100                    | 11                  | 67           | PZ2 100   |
| 050129            | -                  | 6X40/12 V             | 25                                | 12                                      | 47                              | 35                  | 6                              | 100                    | 10                  | 39           | PZ2 100   |
| 050131            | -                  | 6X50/25 V             | 25                                | 25                                      | 60                              | 35                  | 6                              | 100                    | 10                  | 52           | PZ2 100   |
| 050132            | -                  | 6X65/40 V             | 25                                | 40                                      | 75                              | 35                  | 6                              | 100                    | 10                  | 67           | PZ2 100   |
| 050142            | -                  | 6X30/5 M7X150         | 30                                | -                                       | -                               | 40                  | 6                              | 100                    | 11                  | 32           | M7 100    |
| 060090            | 060107             | 8X40/10 P             | 30                                | 10                                      | 50                              | 40                  | 8                              | 100                    | 13                  | 42           | PZ2 50    |
| 055378            | -                  | 8X40/10 P20           | 30                                | 10                                      | 50                              | 40                  | 8                              | 100                    | 13                  | 42           | PZ2 100   |
| 060091            | 060108             | 8X60/30 P             | 30                                | 30                                      | 70                              | 40                  | 8                              | 100                    | 13                  | 62           | PZ2 100   |
| 060092            | 060109             | 8X90/60 P             | 30                                | 60                                      | 100                             | 40                  | 8                              | 100                    | 13                  | 92           | PZ2 100   |
| 060093            | -                  | 8X110/80 P            | 30                                | 80                                      | 120                             | 40                  | 8                              | 100                    | 13                  | 112          | PZ2 100   |
| 060094            | -                  | 8X130/100 P           | 30                                | 100                                     | 140                             | 40                  | 8                              | 100                    | 13                  | 132          | PZ2 100   |
| 060095            | -                  | 8X60/30 V             | 30                                | 30                                      | 70                              | 40                  | 8                              | 100                    | 11.5                | 62           | PZ2 100   |
| 060096            | -                  | 8X90/60 V             | 30                                | 60                                      | 100                             | 40                  | 8                              | 100                    | 11.5                | 92           | PZ2 100   |
| 060097            | -                  | 8X110/80 V            | 30                                | 80                                      | 120                             | 40                  | 8                              | 100                    | 11.5                | 112          | PZ2 50    |
| 060098            | -                  | 8X130/100 V           | 30                                | 100                                     | 140                             | 40                  | 8                              | 100                    | 11.5                | 132          | PZ2 50    |
| 057601            | -                  | 8X160/125 P           | 30                                | 125                                     | 206                             | 40                  | 8                              | 100                    | 15                  | 198          | PZ3 50    |
| 057602            | -                  | 8X180/145 P           | 30                                | 145                                     | 166                             | 40                  | 8                              | 100                    | 15                  | 158          | PZ3 50    |
| 057603            | -                  | 8X200/165 P           | 30                                | 165                                     | 206                             | 40                  | 8                              | 100                    | 15                  | 198          | PZ3 50    |

\* In masonry, the thickness of the part to be fixed may fluctuate, to  $\pm 5$  mm for  $\varnothing 5$  and  $\varnothing 6$  mm and to  $\pm 10$  mm for  $\varnothing 8$  mm, to allow a good contact between collar and the part to be fixed.

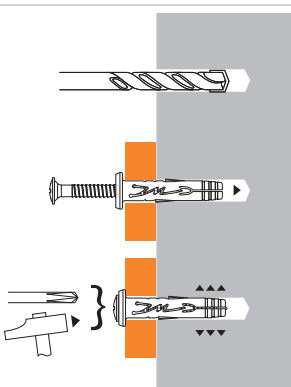
## Applications

- Insulation cladding
- Profiles for thin coat external
- Insulation systems
- Drywall track
- Wood
- Flashing
- Electrical accessories
- Collar

## Material

- Body: polyamid 6
- Expansion nail: Zinc coated steel: FR 15 (5  $\mu$ m) Stainless steel: A2
- Screw head type: PZ2/PZ3

## Installation



### WARNING:

For anchor sizes 8X160/125P, 8X180/145P & 8X200/165P, setting only by screwing

## Characteristics Load ( $N_{RK}$ $V_{RK}$ ) in kN

### TENSILE

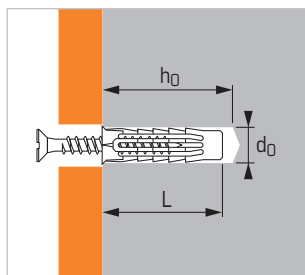
| Anchor size                                                               | $\varnothing 5$ | $\varnothing 6$ | $\varnothing 8$ |
|---------------------------------------------------------------------------|-----------------|-----------------|-----------------|
| Base material                                                             |                 |                 |                 |
| Concrete (C20/25)                                                         |                 |                 |                 |
| $N_{RK}$                                                                  | 0,60            | 0,90            | 1,2             |
| Solid concrete blocks B120 ( $f_c = 13,5$ N/mm <sup>2</sup> )             |                 |                 |                 |
| $N_{RK}$                                                                  | 0,30            | 0,40            | 0,50            |
| Clay bricks ( $f_c = 55$ N/mm <sup>2</sup> )                              |                 |                 |                 |
| $N_{RK}$                                                                  | 0,20            | 0,80            | 1,2             |
| Hollow concrete blocks B40 not rendered ( $f_c = 6,5$ N/mm <sup>2</sup> ) |                 |                 |                 |
| $N_{RK}$                                                                  | 0,20            | 0,30            | 1,2             |
| Hollow concrete blocks B40 rendered ( $f_c = 6,5$ N/mm <sup>2</sup> )     |                 |                 |                 |
| $N_{RK}$                                                                  | 0,95            | 1,70            | 2,25            |
| Hollow clay bricks Eco-30 not rendered ( $f_c = 4,5$ N/mm <sup>2</sup> )  |                 |                 |                 |
| $N_{RK}$                                                                  | 0,30            | 0,40            | 0,50            |
| Hollow clay bricks Eco-30 rendered ( $f_c = 4,5$ N/mm <sup>2</sup> )      |                 |                 |                 |
| $N_{RK}$                                                                  | 0,95            | 1,30            | 1,70            |
| Engineering clay bricks not rendered ( $f_c = 14,5$ N/mm <sup>2</sup> )   |                 |                 |                 |
| $N_{RK}$                                                                  | 0,55            | 0,75            | 0,95            |
| Engineering clay bricks rendered ( $f_c = 14,5$ N/mm <sup>2</sup> )       |                 |                 |                 |
| $N_{RK}$                                                                  | 0,95            | 1,30            | 1,70            |
| Aerated concrete ( $M_{vn} = 500$ kg/m <sup>3</sup> )                     |                 |                 |                 |
| $N_{RK}$                                                                  | 0,15            | 0,2             | 0,3             |
| Plasterboard BA13                                                         |                 |                 |                 |
| $N_{RK}$                                                                  | 0,15            | 0,15            | 0,18            |
| Plasterboard BA10 + polystyren                                            |                 |                 |                 |
| $N_{RK}$                                                                  | 0,18            | 0,18            | 0,2             |

### SHEAR

|          | 5X25/5<br>5X35/15 | 6X30/5<br>6X40/12<br>6X50/25 | 6X65/40 | 8X40/10<br>to<br>8X90/60 | 8X110/80<br>to<br>8X200/165 |
|----------|-------------------|------------------------------|---------|--------------------------|-----------------------------|
| $V_{RK}$ | 1,9               | 2,8                          | 2,25    | 4,3                      | 3,55                        |
| $V_{RK}$ | 1,9               | 2,8                          | 2,25    | 4,3                      | 3,55                        |
| $V_{RK}$ | 1,9               | 2,8                          | 2,25    | 4,3                      | 3,55                        |
| $V_{RK}$ | 1,9               | 2,25                         | 2,25    | 2,8                      | 2,8                         |
| $V_{RK}$ | 1,9               | 2,25                         | 2,25    | 2,8                      | 2,8                         |
| $V_{RK}$ | 0,55              | 0,75                         | 0,75    | 0,9                      | 0,9                         |
| $V_{RK}$ | 0,9               | 1,1                          | 1,3     | 1,7                      | 1,7                         |
| $V_{RK}$ | 1,9               | 2,25                         | 2,25    | 2,8                      | 2,8                         |
| $V_{RK}$ | 1,9               | 2,8                          | 2,25    | 4,3                      | 3,55                        |
| $V_{RK}$ | 0,15              | 0,2                          | 0,2     | 0,3                      | 0,3                         |
| $V_{RK}$ | 0,15              | 0,15                         | 0,15    | 0,18                     | 0,18                        |
| $V_{RK}$ | 0,18              | 0,18                         | 0,18    | 0,2                      | 0,2                         |

## Description

Nylon anchor for hollow and solid material



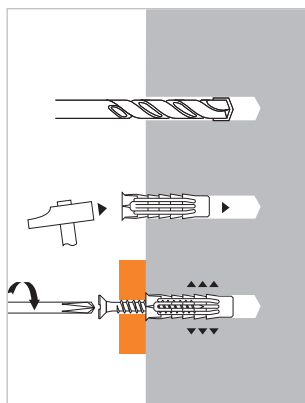
## Applications

- Lightweight fixing in all base material
- Small electrical accessories, small light fittings, fuse boxes, etc...

## Material

- Body: polyamid 6  
Suitable temperature - 20° + 40°C
- Screw : Special screw supplied, head type PZ2

## Installation



## Technical Data

| Part No.      |                | Anchor Size (mm) | Screw diameter (mm) | Drilling depth (mm) h <sub>0</sub> | Drilling diameter (mm) d <sub>0</sub> | Total anchor length (mm) L | Order Qty (mm) |
|---------------|----------------|------------------|---------------------|------------------------------------|---------------------------------------|----------------------------|----------------|
| without screw | with VBA screw |                  |                     |                                    |                                       |                            |                |
| 565642        | 565646         | 5X25             | 3-4                 | 35                                 | 5                                     | 25                         | 100            |
| 565643        | 565647         | 6X30             | 4-5                 | 40                                 | 6                                     | 30                         | 100            |
| 565644        | 565648         | 8X40             | 4.5-6               | 50                                 | 8                                     | 40                         | 100            |
| 565645        | 565649         | 10X50            | 6-8                 | 65                                 | 10                                    | 50                         | 50             |
| 565617        | -              | 12X60            | 8-10                | 75                                 | 12                                    | 60                         | 25             |
| 565618        | -              | 14X70            | 10-12               | 85                                 | 14                                    | 70                         | 20             |

## Recommended Load (N<sub>rec</sub>) and Ultimate Load (N<sub>Ru,m</sub>) in kN with wood screw

### TENSILE

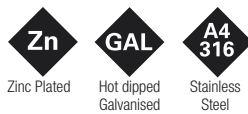
| Base material \ Anchor size        | Screw Ø | Ø5<br>4 | Ø6<br>5 | Ø8<br>6 | Ø10<br>8 |
|------------------------------------|---------|---------|---------|---------|----------|
| <b>Concrete (&gt;C20/25)</b>       |         |         |         |         |          |
| N <sub>rec</sub> *                 |         | 0,28    | 0,28    | 0,50    | 0,70     |
| N <sub>Ru,m</sub> *                |         | 1,40    | 1,40    | 2,50    | 3,50     |
| <b>Hollow concrete blocks B 40</b> |         |         |         |         |          |
| N <sub>rec</sub> *                 |         | 0,23    | 0,3     | 0,43    | 0,46     |
| N <sub>Ru,m</sub> *                |         | 1,15    | 1,5     | 2,15    | 2,30     |
| <b>Clay bricks BP 400</b>          |         |         |         |         |          |
| N <sub>rec</sub> *                 |         | 0,20    | 0,26    | 0,35    | 0,60     |
| N <sub>Ru,m</sub> *                |         | 1,00    | 1,30    | 1,75    | 3,00     |
| <b>Hollow clay bricks Eco 40</b>   |         |         |         |         |          |
| N <sub>rec</sub> *                 |         | 0,17    | 0,19    | 0,23    | 0,25     |
| N <sub>Ru,m</sub> *                |         | 0,85    | 0,95    | 1,15    | 1,25     |

\* Indicative values : depending on the type of screw used, the loads must be reduce by 50 %





### Material Specification



## Description

Cast-In Anchor to suit various bolt type

The TCM is a medium to heavy duty, cast-in ferrule. All steel threaded socket for casting into pre-cast concrete and institute concrete elements, giving a prefixed fastening point.

## Product Advantages

- Stress free anchoring close to edge and reduced anchor spacing
- Cast-in placement eliminates the need for drilling, this is particularly important where reinforcing is present in the fixing zone
- Ideal for shallow embedment as the anchor can be tied into the reinforcing to distribute the load over a wider area to become an integral part of the reinforcing structure
- High tensile load carrying capacities as well as applications in tension zones
- Also available in A4 316 material for industrial environment

## Typical Applications

- Structural connections
- Curtain wall and façade fixings (concrete, GRC etc)
- Anchoring bracing and precast panels

## Substrates

- Concrete
- GRC



## Installation

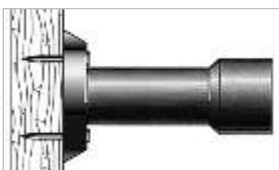


Concrete inserts can be set in wet concrete, attached into reinforcing through the cross hole (for reinforced case) or fastened to the inside of formwork with a bolt through the formwork.

1. Drill hole in formwork. Pass the bolt through the hole into the concrete insert and tighten. Tie the insert to the reinforcing system.

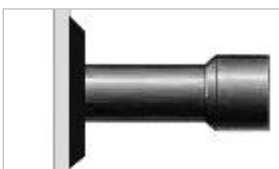


2. Pour the concrete. Remove the bolt and formwork leaving the concrete insert firmly embedded.



Options to use with nail plate and glue-on plate:

1. Nail plate



2. Glue-on plate (for steel formwork)

## TCM™ Cast-in Anchors (Stainless Steel) - Recommended Working Loads in 40N/mm<sup>2</sup> non-cracked Concrete

| Thread<br>Ø | Embedment<br>Depth (mm) | Torque<br>(Nm) | Unreinforced ferrule |                      | Reinforced ferrule |                      |
|-------------|-------------------------|----------------|----------------------|----------------------|--------------------|----------------------|
|             |                         |                | Shear Load<br>(kN)   | Tensile Load<br>(kN) | Shear Load<br>(kN) | Tensile Load<br>(kN) |
| M8          | 28                      | 10             | 5.9                  | 4.9                  | -                  | -                    |
| M10         | 29                      | 17             | 8.7                  | 5.3                  | 8.7                | 6.3                  |
| M12         | 37                      | 30             | 14.2                 | 7.8                  | 14.2               | 9.3                  |
| M16         | 52                      | 75             | 28.0                 | 14.4                 | 28.0               | 17.2                 |
| M20         | 57                      | 144            | 31.7                 | 16.1                 | 31.7               | 19.3                 |
| M24         | 101                     | 250            | 42.7                 | 35.5                 | 42.7               | 43.1                 |

\* Safety factor for all loads = 3

\* This table does not consider edge distance and anchor spacing effects. Please refer to Ramset Design Guide for more information.

\* Pull out test for single anchor = working load x 1.5

\* Reinforcing TCM is TCM connected to reinforcing bar of specified length.

## TCM™ Cast-in Anchors (Zn Plated / Hot Dipped Galv) - Recommended Working Loads in 40N/mm<sup>2</sup> non-cracked Concrete

| Thread<br>Ø | Embedment<br>Depth (mm) | Torque<br>(Nm) | Unreinforced ferrule |                      | Reinforced ferrule |                      |
|-------------|-------------------------|----------------|----------------------|----------------------|--------------------|----------------------|
|             |                         |                | Shear Load<br>(kN)   | Tensile Load<br>(kN) | Shear Load<br>(kN) | Tensile Load<br>(kN) |
| M8          | 28                      | 10             | 5.5                  | 4.9                  | -                  | -                    |
| M10         | 29                      | 17             | 8.5                  | 5.3                  | 8.5                | 6.3                  |
| M12         | 37                      | 30             | 13.3                 | 7.8                  | 13.3               | 9.3                  |
| M16         | 52                      | 75             | 26.9                 | 14.4                 | 26.9               | 17.2                 |
| M20         | 57                      | 144            | 29.3                 | 16.1                 | 29.3               | 19.3                 |
| M24         | 101                     | 250            | 36.7                 | 35.5                 | 36.7               | 43.1                 |

\* Safety factor for all loads = 3

\* This table does not consider edge distance and anchor spacing effects. Please refer to Ramset Design Guide for more information.

\* Pull out test for single anchor = working load x 1.5

\* Reinforcing TCM is TCM connected to reinforcing bar of specified length.

## TCM™ Cast-in Anchors

| Part No.  |         |          | Thread<br>Ø<br>(mm) | Overall Anchor<br>Length<br>(mm) | Thread<br>Length<br>(mm) | Cross Hole to suit<br>(Reinforced ferrule)<br>(mm) | Order<br>Qty |
|-----------|---------|----------|---------------------|----------------------------------|--------------------------|----------------------------------------------------|--------------|
| Zn Plated | Galv    | SS       |                     |                                  |                          |                                                    |              |
| TCM8R     | TCM8GH  | TCM8RSS  | M8                  | 35                               | 16                       | R8x300                                             | 50           |
| TCM10R    | TCM10GH | TCM10RSS | M10                 | 44                               | 20                       | R8x300                                             | 50           |
| TCM12R    | TCM12GH | TCM12RSS | M12                 | 54                               | 25                       | R8x300                                             | 50           |
| TCM16R    | TCM16GH | TCM16RSS | M16                 | 75                               | 32                       | Y12x300                                            | 50           |
| TCM20R    | TCM20GH | TCM20RSS | M20                 | 80                               | 38                       | Y12x300                                            | 25           |
| TCM24R    | TCM24GH | TCM24RSS | M24                 | 125                              | 50                       | Y12x300                                            | 25           |

## Metric Plastic Nail Plates

| Part No. | Description                           | Qty (per box) |
|----------|---------------------------------------|---------------|
| NP12     | Nail Plate to suit M12 Cast-in Anchor | 100           |
| NP16     | Nail Plate to suit M16 Cast-in Anchor | 100           |
| NP20     | Nail Plate to suit M20 Cast-in Anchor | 100           |
| NP24     | Nail Plate to suit M24 Cast-in Anchor | 100           |



## Glue-on Metric Plate

| Part No. | Description               | Qty (per box) |
|----------|---------------------------|---------------|
| NP12GLUE | Glue-on Plate 12mm Red    | 100           |
| NP16GLUE | Glue-on Plate 16mm Green  | 100           |
| NP20GLUE | Glue-on Plate 20mm Blue   | 100           |
| NP24GLUE | Glue-on Plate 24mm Yellow | 100           |
| GPTAB    | Double-sided Adhesive Tab | 100           |

Note: All glue-on plates do not come with Adhesive Tab in the box.





## Material Specification



Zinc Plated



Stainless Steel



Stainless Steel

## Description

Cast-In Anchor to suit various bolt type

The CIM is a medium to heavy duty, cast-in ferrule. All steel threaded socket for casting into pre-cast concrete and institute concrete elements, giving a prefixed fastening point.

## Product Advantages

- Stress free anchoring close to edge and reduced anchor spacing
- Cast-in placement eliminates the need for drilling, this is particularly important where reinforcing is present in the fixing zone
- Ideal for shallow embedment as the anchor can be tied into the reinforcing to distribute the load over a wider area to become an integral part of the reinforcing structure
- High tensile load carrying capacities as well as applications in tension zones
- Simple cost effective design with material or finishing ranging from ZP, HDG, A2 and A4

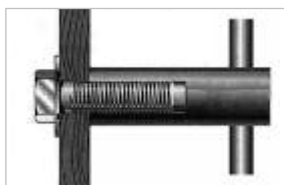
## Substrates

- Concrete
- GRC

## Applications

- Structural connections
- Curtain wall and façade fixings (concrete, GRC etc)
- Panel to panel connection
- High shear load applications
- Cooking bench
- Temporary precast panel bracing points

## Installation



1. Drill hole in formwork. Pass the bolt through the hole into the concrete insert and tighten. Tie the pin of the insert to the reinforcing system.

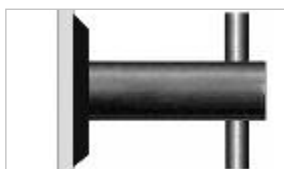


2. Pour the concrete. Remove the bolt and formwork leaving the concrete insert firmly embedded.



Options to use with nail plate and glue-on plate:

1. Nail plate
2. Glue-on plate (for steel formwork)



## CIM Cast-in Anchors (Stainless Steel A2/A4) - Recommended Working Loads in 40N/mm<sup>2</sup> non-cracked Concrete

| Thread<br>Ø | Embedment<br>Depth (mm) | Torque<br>(Nm) | Unreinforced ferrule |                      | Reinforced ferrule |                      |
|-------------|-------------------------|----------------|----------------------|----------------------|--------------------|----------------------|
|             |                         |                | Shear Load<br>(kN)   | Tensile Load<br>(kN) | Shear Load<br>(kN) | Tensile Load<br>(kN) |
| M6          | 26                      | 5              | 3.3                  | 3.2                  | 3.3                | 3.9                  |
| M8          | 26                      | 10             | 5.5                  | 4.9                  | 5.5                | 5.9                  |
| M10         | 35                      | 17             | 8.7                  | 5.0                  | 8.7                | 6.3                  |
| M12         | 46                      | 30             | 12.0                 | 7.3                  | 12.0               | 9.1                  |
| M16         | 57                      | 75             | 22.1                 | 12.3                 | 22.1               | 15.4                 |
| M20         | 67                      | 144            | 26.0                 | 13.9                 | 26.0               | 17.4                 |
| M24         | 112                     | 250            | 33.7                 | 32.5                 | 33.7               | 40.8                 |

\* Safety factor for all loads = 3  
 \* Shear load is calculated using Grade 8.8 steel or A4-80 stainless steel bolt  
 \* This table does not consider edge distance and anchor spacing effects. Please refer to Ramset Design Guide for more information.  
 \* Pull out test for single anchor = working load x 1.5  
 \* Reinforcing CIM is CIM connected to reinforcing bar of specified length.

## CIM Cast-in Anchors (Zn Plated) - Recommended Working Loads in 40N/mm<sup>2</sup> non-cracked Concrete

| Thread<br>Ø | Embedment<br>Depth (mm) | Torque<br>(Nm) | Unreinforced ferrule |                      | Reinforced ferrule |                      |
|-------------|-------------------------|----------------|----------------------|----------------------|--------------------|----------------------|
|             |                         |                | Shear Load<br>(kN)   | Tensile Load<br>(kN) | Shear Load<br>(kN) | Tensile Load<br>(kN) |
| M6          | 26                      | 5              | 3.0                  | 3.2                  | 3.0                | 3.9                  |
| M8          | 26                      | 10             | 5.2                  | 4.9                  | 5.2                | 5.9                  |
| M10         | 35                      | 17             | 8.5                  | 5.0                  | 8.5                | 6.3                  |
| M12         | 46                      | 30             | 11.6                 | 7.3                  | 11.6               | 9.1                  |
| M16         | 57                      | 75             | 20.9                 | 12.3                 | 20.9               | 15.3                 |
| M20         | 67                      | 144            | 23.3                 | 13.9                 | 23.3               | 17.4                 |
| M24         | 112                     | 250            | 29.0                 | 32.5                 | 29.0               | 40.7                 |

\* Safety factor for all loads = 3  
 \* Shear load is calculated using Grade 8.8 steel or A4-80 stainless steel bolt  
 \* This table does not consider edge distance and anchor spacing effects. Please refer to Ramset Design Guide for more information.  
 \* Pull out test for single anchor = working load x 1.5  
 \* Reinforcing CIM is CIM connected to reinforcing bar of specified length.

## CIM Cast-in Anchors

| Part No.  |         |            | Thread<br>Ø<br>(mm) | Overall Anchor<br>Length<br>(mm) | Thread<br>Length<br>(mm) | Fixture Hole<br>Ø<br>(mm) | Order<br>Qty |
|-----------|---------|------------|---------------------|----------------------------------|--------------------------|---------------------------|--------------|
| Zn Plated | SS304   | SS316      |                     |                                  |                          |                           |              |
| CIM06     | CIM06SS | CIM06SS316 | M6                  | 35                               | 14                       | 7                         | 50           |
| CIM08     | CIM08SS | CIM08SS316 | M8                  | 35                               | 16                       | 9                         | 50           |
| CIM10     | CIM10SS | CIM10SS316 | M10                 | 44                               | 22                       | 12                        | 50           |
| CIM12     | CIM12SS | CIM12SS316 | M12                 | 55                               | 25                       | 14                        | 50           |
| CIM16     | CIM16SS | CIM16SS316 | M16                 | 70                               | 32                       | 18                        | 50           |
| CIM20     | CIM20SS | CIM20SS316 | M20                 | 80                               | 38                       | 22                        | 25           |
| CIM24     | CIM24SS | CIM24SS316 | M24                 | 125                              | 50                       | 27                        | 25           |

## Metric Plastic Nail Plates

| Part No. | Description                           | Qty (per box) |
|----------|---------------------------------------|---------------|
| NP12     | Nail Plate to suit M12 Cast-in Anchor | 100           |
| NP16     | Nail Plate to suit M16 Cast-in Anchor | 100           |
| NP20     | Nail Plate to suit M20 Cast-in Anchor | 100           |
| NP24     | Nail Plate to suit M24 Cast-in Anchor | 100           |

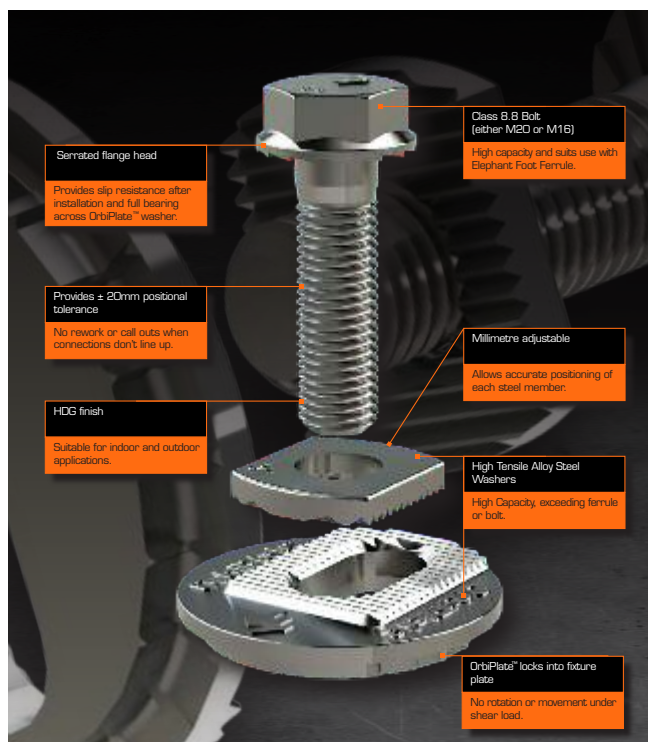


## Glue-on Metric Plate

| Part No. | Description               | Qty (per box) |
|----------|---------------------------|---------------|
| NP12GLUE | Glue-on Plate 12mm Red    | 100           |
| NP16GLUE | Glue-on Plate 16mm Green  | 100           |
| NP20GLUE | Glue-on Plate 20mm Blue   | 100           |
| NP24GLUE | Glue-on Plate 24mm Yellow | 100           |
| GPTAB    | Double-sided Adhesive Tab | 100           |

Note: All glue-on plates do not come with Adhesive Tab in the box.





| Material                 |                                     |
|--------------------------|-------------------------------------|
| <b>Zn</b><br>Zinc Plated | <b>GAL</b><br>Hot dipped Galvanised |

## Typical Applications

- Panel to panel fixing
- Raker Angles
- Roof beams to walls
- Panels to steel columns

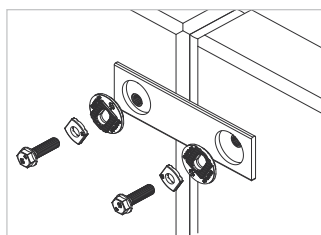
## Description

### OrbiPlate™

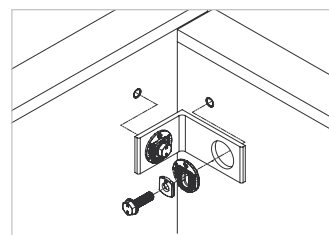
OrbiPlate™ overcomes the main headache that comes with bolted connections, getting the holes to line up! A large washer with an elongated slot surrounded by teeth that lock the smaller washer in place, positioning the main structural bolt in alignment with the ferrule even with up to 20mm misalignment.

## Feature and Benefits

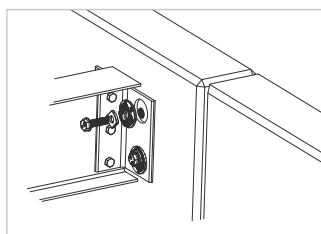
- Provides 20mm positional tolerance.
- Fine positional adjustment
- No rotation under shear load.
- High structural capacity
- Allows fine positional adjustment
- Avoids misalignment delays and call outs.
- No hot work required on site.



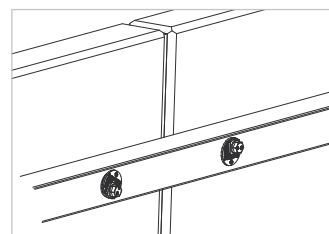
Straight panel to panel connection



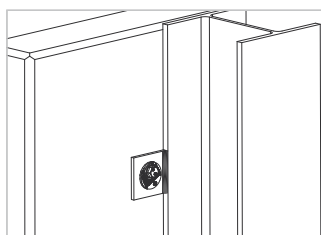
Corner panel to panel connection



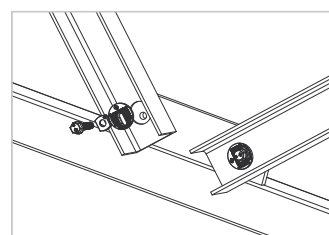
Roof beam to panel connection



Raker angle to panel connection



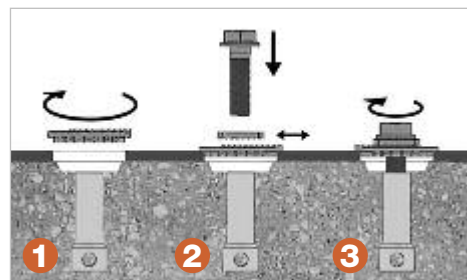
Column to panel connection

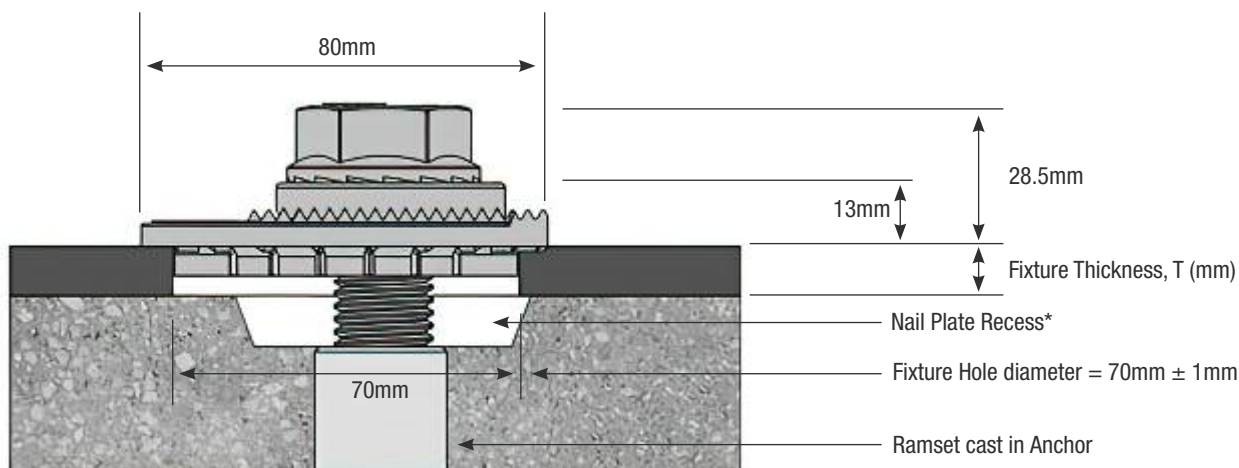


Steel to steel connection

## Installation

1. Place the large washer in the 70mm fixture hole and rotate until the slot lines up with the ferrule.
2. Move small washer along slot until it aligns with ferrule.
3. Insert the bolt and tighten to specified torque.





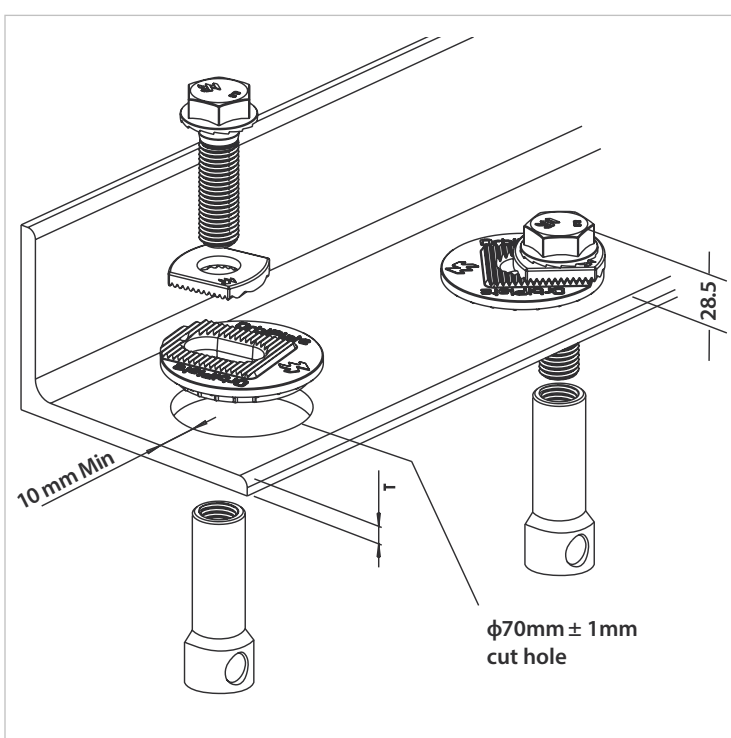
## Description And Part Numbers

### OrbiPlate™

| Part No.   | Ferrule Size d <sub>b</sub> | Washer OD (mm) | Fixture Hole Ø (mm) | Bolt     | Hex Head AF (mm) | Order Qty |
|------------|-----------------------------|----------------|---------------------|----------|------------------|-----------|
| ORB2016BGH | M16                         | 80             | 70 ± 1              | M16 x 50 | 30               | 50        |
| ORB2020BGH | M20                         | 80             | 70 ± 1              | M20 x 60 | 30               | 25        |

### Ferrules

| Part No.         | Size         | Emberment Depth (mm) | Anchor length (mm) | Order Qty |
|------------------|--------------|----------------------|--------------------|-----------|
| <b>Zn Plated</b> | <b>SS304</b> |                      |                    |           |
| CIM16            | CIM16SS      | 57                   | 70                 | 50        |
| CIM20            | CIM20SS      | 67                   | 80                 | 25        |
|                  | <b>SS316</b> |                      |                    |           |
| CIM16            | CIM16SS316   | 57                   | 70                 | 50        |
| CIM20            | CIM20SS316   | 67                   | 80                 | 25        |
| <b>Zn Plated</b> | <b>GALV.</b> |                      |                    |           |
| TCM16            | TCM16GH      | 52                   | 75                 | 50        |
| TCM20            | TCM20GH      | 57                   | 80                 | 25        |
|                  | <b>SS316</b> |                      |                    |           |
| TCM16            | TCM16SS      | 52                   | 75                 | 50        |
| TCM20            | TCM20SS      | 57                   | 80                 | 25        |



## Description

### Modfix Shimplate

Designed for packing underneath concrete precast or tilt-up panel, to gain alignment with a non-skid surface.

Colour coded by thickness for ease of selection. Modfix packing shims are manufactured from quality plastic and tested with compressive loads up to 20 tonnes.

Horseshoe style with long and short slots, are also available for placement around starter bars, locating bolts and pins etc.

### Ideal for

Commercial and civil applications such as packing under panels, machines, door and window frames.

### Size availability

Standard size 150 x 100 with 1, 2, 3, 5, 10, 15 and 20mm thickness.

Horseshoe and half shims are also available



## Feature and Benefits

- Very light to carry that ease the job at height
- No contact corrosion with steel or stainless steel bracket/anchor
- Variety of size and thickness

## Material and Properties

A reinforced polypropylene blend compound, exhibiting excellent surface finish and processability characteristics.

| Property           | Test Method | Units | Value <sup>(2)(3)</sup> |
|--------------------|-------------|-------|-------------------------|
| Tensile @ Yield    | ASTMD638    | MPa   | 28                      |
| Elongation @ Break | ASTMD638    | %     | 50                      |
| Flexural Strength  | ASTMD790    | MPa   | 42                      |
| Flexural Modulus   | ASTMD790    | GPa   | 2.4                     |

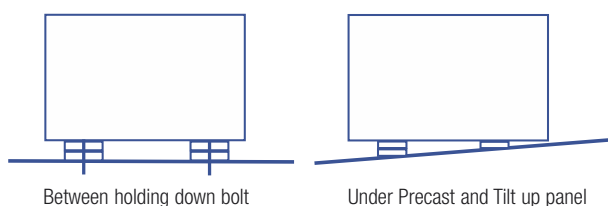
(1) Typical properties; not to be construed as specifications.

(2) Values quoted are the result of tests on representative samples and the product supplied may not conform in all respects.

(3) Values quoted are the result of tests on Natural/Un-pigmented product. These values may vary on products that contain pigmentation or any other additive.

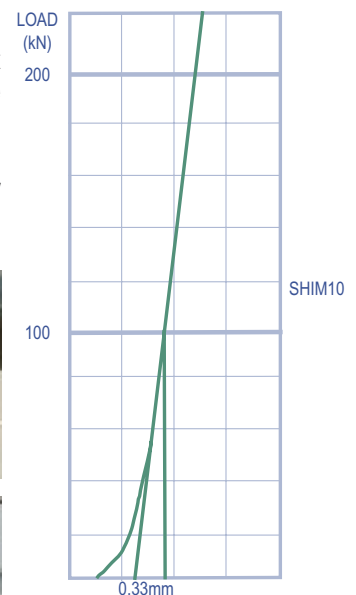
## Typical Application

- Bottom of precast panel
- Shim between steel bracket and wall



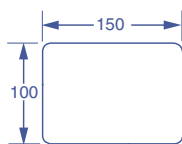
### Load Performance

Compression tests on Modfix standard panel shims have been carried out at Monash University, Department of Material Engineering. No Yielding nor any deformation was observed.



## Dimension

Full Shim 150mm x 100mm

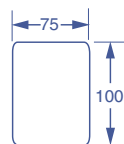


FULL SHIM

**FULL**

| Thickness | Colour | Pack Qty. | Part No. |
|-----------|--------|-----------|----------|
| 1         | BROWN  | 100       | SHIM01   |
| 2         | BLUE   | 200       | SHIM02   |
| 3         | GREEN  | 100       | SHIM03   |
| 5         | YELLOW | 100       | SHIM05   |
| 10        | BLACK  | 40        | SHIM10   |
| 15        | GREY   | 40        | SHIM15   |
| 20        | WHITE  | 30        | SHIM20   |

Half Shim 100mm x 75 mm

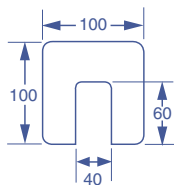


HALF SHIM

**HALF**

| Thickness | Colour | Pack Qty. | Part No. |
|-----------|--------|-----------|----------|
| 1         | BROWN  | 200       | SHS01    |
| 2         | BLUE   | 400       | SHS02    |
| 3         | GREEN  | 200       | SHS03    |
| 5         | YELLOW | 200       | SHS05    |
| 10        | BLACK  | 80        | SHS10    |
| 15        | GREY   | 80        | SHS15    |
| 20        | WHITE  | 60        | SHS20    |

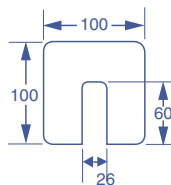
Horseshoe Shim 100mm x 100 mm with slot 60mm x 40mm



**TYPE 'C'**

| Thickness | Colour | Pack Qty. | Part No.      |
|-----------|--------|-----------|---------------|
| 2         | BLUE   | 200       | SHHC02-100/40 |
| 3         | GREEN  | 200       | SHHC03-100/40 |
| 5         | YELLOW | 200       | SHHC05-100/40 |
| 10        | BLACK  | 100       | SHHC10-100/40 |

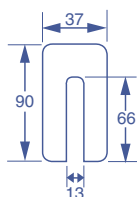
Horseshoe Shim 100mm x 100 mm with slot 60mm x 26mm



**TYPE 'C'**

| Thickness | Colour | Pack Qty. | Part No.      |
|-----------|--------|-----------|---------------|
| 1         | BROWN  | 200       | SHHC01-100/26 |
| 5         | YELLOW | 200       | SHHC05-100/26 |

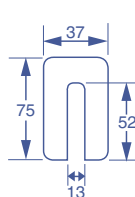
Horseshoe Shim 90mm x 37 mm with slot 66mm x 13mm



**TYPE 'B'**

| Thickness | Colour | Pack Qty. | Part No.    |
|-----------|--------|-----------|-------------|
| 1.5       | BROWN  | 1000      | SHHB01.5-90 |
| 3         | GREEN  | 1000      | SHHB03-90   |
| 5         | YELLOW | 1000      | SHHB05-90   |
| 10        | BLACK  | 500       | SHHB10-90   |

Horseshoe Shim 75mm x 37 mm with slot 52mm x 13mm



**TYPE 'A'**

| Thickness | Colour | Pack Qty. | Part No.    |
|-----------|--------|-----------|-------------|
| 1.5       | BROWN  | 500       | SHHA01.5-75 |
| 3         | GREEN  | 300       | SHHA03-75   |
| 5         | YELLOW | 250       | SHHA05-75   |
| 6.5       | WHITE  | 200       | SHHA06.5-75 |
| 10        | BLACK  | 125       | SHHA10-75   |



**Safety Comes first**

#### Material Specification



## Description

Safety Ring Anchor System

Conforming to the Requirement of BS EN 795 Standard

Specifically design for use on buildings where windows cleaners and others that employ industrial rope access.

The Safety Ring Anchor System provides a secure, permanent anchorage point for fall arresting safety harnesses.

The system meets the static and dynamic strength tests per BS EN 795, as highlighted by OSHA.

## Safety Ring Anchor System (EN795)



| Part No. | Material         | Thread Ø | Internal Ring Diameter (mm) | Overall Length (mm) | Min Concrete Thickness (mm) | Anchor Hole Diameter (mm) | Hole Depth (mm) | For use only with | Setting Tool | Order Qty |
|----------|------------------|----------|-----------------------------|---------------------|-----------------------------|---------------------------|-----------------|-------------------|--------------|-----------|
| RSR12GM  | Hot Dipped Galv. | M12      | 16                          | 138                 | 180                         | 16                        | 128             | DSM12SS           | SETSA4       | 4         |
| RSR12SS  | AISI 316(A4)     | M12      | 16                          | 138                 | 180                         | 16                        | 128             | DSM12SS           | SETSA4       | 4         |

NOTE: When installed in accordance with Ramset™ specifications, anchor performance is fully compliant with AS/NZS1891.4:2000 "Industrial fall-arrest systems and devices".

BS EN795 (Static Tension - 12kN, Drop test - 100kg/2.5m)

BS5845 (Static Tension - 10kN, Drop test - 136kg/1m)

AS2626 (Static Tension - 15kN)

NZS5802 (Static Tension - 27kN, Static shear - 5kN, Drop test - 110kg/1.2m)

\* Refer to Ramset™ Design Guide for more information or explanation of technical data

Non-destructive pull-out test of 6kN and sustain for a minimum of 15 seconds is required for each Safety Ring Anchor after installation to ensure the compliance of BS EN 795 Standard.



| Part No.   | Material     | Thread Ø | Thread Length (mm) | Ring Length (mm) | Overall Length (mm) | For use only with |
|------------|--------------|----------|--------------------|------------------|---------------------|-------------------|
| RSRTCM12SS | AISI 316(A4) | M12      | 25                 | 45               | 125                 | TCM12RSS75        |

NOTE: When installed in accordance with Ramset™ specifications, anchor performance is fully compliant with AS/NZS1891.4:2000 "Industrial fall-arrest systems and devices".

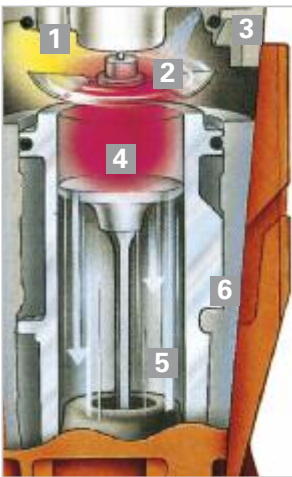
BS EN795 (Static Tension - 10kN, Drop test - 100kg/2.5m)

\* Refer to Ramset™ Design Guide for more information or explanation of technical data

Non-destructive pull-out test of 6kN and sustain for a minimum of 15 seconds is required for each Safety Ring Anchor after installation to ensure the compliance of BS EN 795 Standard.



Gas Technology - How it works



- 1. Spark Plug
- 2. Fan Motor
- 3. Fuel Port
- 4. Combustion Chamber
- 5. Piston Assembly
- 6. Cylinder

With its own internal combustion engine, Ramset™ Gas Technology fastens cable management, wiring accessories and partitioning track much faster than any other system!

At the heart of Ramset™ Gas Technology is the patented linear combustion engine. With its steel piston rings and precision-machined combustion chamber, Ramset™ Gas Technology drives fasteners 6 times faster than traditional explosive power actuated tool system.

When used with PULSA fuel cells and Ramset approved fasteners, European Safety Standard EN 792-13 can be met to ensure operators safety.

How to select a Ramset™ Gas Technology Fixing to directly fasten an object for permanent installation

Fixing to concrete

As the fixing enters the concrete, extreme pressure and heat are created. This creates a bond that provides high loading strength in concrete.

Edge distance

Do not fix closer than 60mm from the edge of concrete. If the concrete cracks, the fixing may not hold.

Recommended minimum fixing spacing

Setting fixings too close together can cause the concrete to crack. The recommended minimum distance between fixings is 40mm. Never attempt a fixing application too close to another fixing as this could affect the previously inserted fixing's embedment.

Concrete thickness

It is important that the concrete be at least three times as thick as the fixing penetration. If the concrete is too thin, the compressive forces forming at the fixing's point can cause the free face of the concrete to break away. This creates a dangerous condition from flying concrete and / or the fixing and also results in a reduction of fastener holding power.

Fixing to steel

The resilience of steel provides a clamping effect to the fixing. This combined with the tremendous heat that is created, provides a welding and clamping effect to give maximum holding power.

Edge distance

The recommended edge distance for a fixing to the edge of steel is 10mm. Never fire the tool within 10mm of the edge of a steel base material because the steel may bend or break off, allowing the fixing to ricochet.

Recommended minimum fastener spacing

The recommended minimum distance between fixings is 20mm. Never attempt a fixing application too close to another fixing as this could affect the previously installed fixing's embedment.

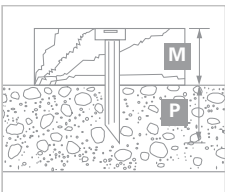
Steel thickness.

Do not fasten into steel base material thinner than the fastener shank diameter. Holding power may be reduced and the fastener may be overdriven.

As a guide when:

- Fixing into steel - min. steel thickness = 3mm

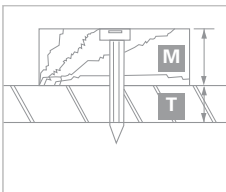
Minimum Shank Length



Minimum Shank Length

Thickness of material (M) + Required penetration (P)

Minimum Shank Length



Minimum Shank Length

Thickness of material (M) + Thickness of steel (T) + 5mm point allowance

## Adjusting Fastener Penetration – TrakMaster™ & Trakfast™ 800 Plus Only

All Ramset™ Gas Technology tools automatically adjust their power to suit the supporting material. These gas technology tools can adjust their power up to a maximum impact energy that is determined by the capability of each tool model. (This is one of the main differences between Ramset™ Gas Technology tools and Powder Actuated tools).

Even though Ramset™ Gas Technology tools automatically adjust their power, certain applications may require the fastener to penetrate deeper into the base material or penetrate less.

Ramset™ TrakMaster™ and Trakfast™ 800 Plus tools are designed with a feature that allows adjustment of the fastener penetration to be performed. This adjustment is dependent both on the type and hardness of the base material and on the object being fixed. The adjustment does not affect the impact energy that is supplied to the fastener.

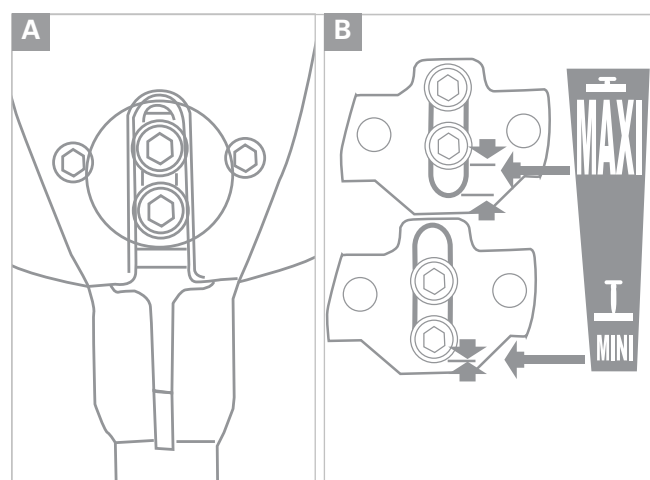
To ensure successful fixing of cable clips (EClip™ etc.) it is recommended that the gas tool is set to the minimum drive position. Failure to do so could result in cracking or breaking of accessories and PVC trunking.

Penetration is adjusted by slackening the two screws (A) on the upper part of the barrel using the allen key provided and moving them backwards or forwards (4mm) in the recess on plate (B).

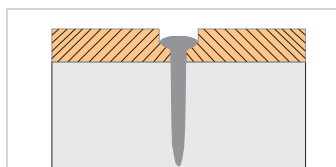
The adjustment range is 4mm. Intermediate adjustments between maximum and minimum are possible.

For best fixing results, check the adjustment position before and during work.

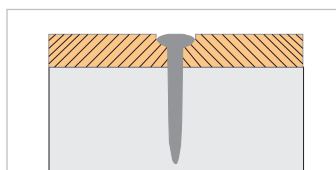
## Adjusting Penetration



## Maximum Penetration



## Minimum Penetration

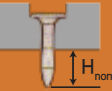
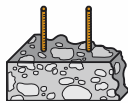


## Pulsa™ Technology - TrakMaster™ & Trakfast™ 800 Plus Only

As gases are affected by temperature, to generate exactly the same power in a gas technology tool the fuel injector must vary the amount of gas delivered to the combustion chamber.

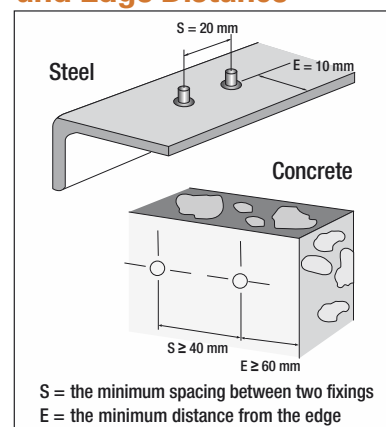
The TrakMaster™ and Trakfast™ 800 Plus tools use PULSA™ technology which employs temperature dependent Electronic Fuel Injection (E.F.I.) to accurately inject the exact amount of gas that the tool requires no matter what the ambient temperature is. The tool actually detects what the ambient temperature is and calculates the amount of gas to release from the fuel cell. This 'smart' technology ensures that the tool delivers the right amount of power.... every time!

## Characteristic and Recommended Load

| Substrate                                                                                                                                                      |  $H_{nom}$ | Characteristic Resistance |               | Recommended Load* |                |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|---------------------------|---------------|-------------------|----------------|
|                                                                                                                                                                |                                                                                               | $N_{rk}$ (kN)             | $V_{rk}$ (kN) | $N_{rec}$ (kN)    | $V_{rec}$ (kN) |
|  C20/25 to C60/70 suitable for pre-stressed concrete                        | $H_{nom} = 10 \text{ mm}$                                                                     | 0.34                      | 0.75          | 0.10              | 0.25           |
|                                                                                                                                                                | $H_{nom} = 15 \text{ mm}$                                                                     | 0.87                      |               | 0.30              |                |
|                                                                                                                                                                | $H_{nom} = 18 \text{ mm}$                                                                     | 1.19                      |               | 0.40              |                |
|                                                                                                                                                                | $H_{nom} = 20 \text{ mm}$                                                                     | 1.41                      |               | 0.47              |                |
|  Steel = 410 - 450 N/mm <sup>2</sup><br>Steel = 500 - 550 N/mm <sup>2</sup> | $H_{nom} = 6.5 \text{ mm}$                                                                    | 5.0                       | 3.6           | 1.5               | 1.2            |

\* Loading data is for reference only and it is recommended to make a field test to verify the actual situation. Please contact the sales or technical department for more information.

## Recommended Spacing and Edge Distance





Product from  
**spit**

## Features and Benefits

The TRAKFAST™ 800 Plus offers excellent dust protection, ventilation and cooling: three essential ingredients for better tool efficiency and lifetime. The tool has a dust protected magazine, which together with the air filter offers integrated protection from dust and debris. Dust shield help cool the tool, ideal for periods of intensive use. All these features will result in less tool maintenance, keeping you working longer. Works six times faster than traditional plug screw fixings.

- Massive 100J power – Consistent fixings even in extreme applications.
- 20 pin magazine allowing the tool to fit in tight spaces.
- Optional 50 pin magazine – Reduces downtime in loading the magazine.
- Battery Gauge – Helps avoid running out of battery power.
- Fuel Cell Gauge – Always know when to change fuel cells.
- Lithium Battery – Fast Charge, Long Life
- Tool-less Depth of Drive Adjustment
- Power Saving Technology – isolates battery when tool is not in use
- Easily removable fastener guide and magazine
- Greater tool clearance – Allows the tool to fit in close to edge applications.
- Greater track clearance – Allows the tool to fit in deep track, up to 57mm.
- Removable Support Leg – Ensures tool is at 90° to work surface for optimum fixings
- Electronically controlled fuel injection – Ensures consistent power in a wide temperature range.
- Low Maintenance. Designed to work in all conditions.

## Substrates

Concrete, Composite Steel Decking, Solid Brick, Precast Concrete, Steel Pre-stressed Concrete, Hollow Block Wall, Reinforced Concrete, Reinforced Prefabricated Concrete

## Description

TrakFast™ 800 Plus is the most technologically advanced gas tool on the market. The new TrakFast™ 800 Plus offers a number of innovative features allowing quicker, safer installation of partitioning track, pest control mesh and formwork systems. With the 50 pin magazine and extra power, the speed at which the TrakFast™ 800 Plus is able to perform installations provides tremendous savings in total installed cost.

## Tool Specifications

|                             |                                              |
|-----------------------------|----------------------------------------------|
| Weight                      | 3.8kg (a) / 3.9kg (b)                        |
| Height                      | 309mm (a) / 520mm (b)                        |
| Length                      | 396mm                                        |
| Magazine Capacity           | 20 (+3) pin magazine<br>50 (+3) pin magazine |
| Impact Force                | 100J                                         |
| Actuation Pressure          | 5kg                                          |
| Intermittent Operation      | 2 pins per second                            |
| Fuel Cell Life              | 600 pins (approx)                            |
| Battery Charge Capacity     | 3,000 pins (approx)                          |
| Battery Voltage             | 3.7V Lithium-Ion                             |
| Battery Charge time         | 90mins<br>(25mins for 500 fixings)           |
| Power Regulation            | Automatic                                    |
| Operating Temperature Range | -5°C to 49°C                                 |

Trakfast 800 Plus Gas Tool  
with 50 Pin Magazine



IPC energy absorber



50 nails magazine



Gas & battery  
gauges



Sim and streamlined  
design



Depth of  
drive no tool



Belt lock



Dust protection



New gas cell



New engineered  
fastener guide



Support leg

## Applications



## Product Range - TRAKFAST™ 800 Plus

| Part No.         | Description                                             | Order Qty |
|------------------|---------------------------------------------------------|-----------|
| TRAKFAST800 Plus | Trakfast 800 Plus PULSA Gas Tool (with 20 Pin Magazine) | 1         |

Kit includes: Trakfast™ 800 Tool, high impact carry case, 2 batteries, a battery charger, a safety glasses, allen key, dust cover and instruction manual

## C6 Pins - Standard Concrete Substrates



Raw Material  
Corrosion Protection  
Nominal Head Diameter  
Nominal Shank Diameter  
Shear Strength  
Tensile Strength  
Hardness

Carbon Steel  
Zinc Electroplated (Minimum coating 5µm)  
6.3mm  
2.6mm  
1120N/mm<sup>2</sup>  
1800N/mm<sup>2</sup>  
52-56HR<sub>C</sub> for P8C620; 50-55HR<sub>C</sub> for others

| Part No | Description    | Length | Collection | Order Qty |
|---------|----------------|--------|------------|-----------|
| 060520  | P8C620 Gas Pin | 20mm   | Black      | 500       |
| 060521  | P8C625 Gas Pin | 25mm   | Black      | 500       |
| 060522  | P8C630 Gas Pin | 30mm   | Black      | 500       |
| 060523  | P8C635 Gas Pin | 35mm   | Black      | 500       |
| 057544  | P8C640 Gas Pin | 40mm   | Black      | 500       |

10 strip collation (suitable for use in 20 and 50 pin magazines) + 1 x Pulsa 800 Fuel Cell

## HC6 Pins - Hard Concrete and Steel Substrates



|                        |                                                                              |
|------------------------|------------------------------------------------------------------------------|
| Raw Material           | Carbon Steel                                                                 |
| Corrosion Protection   | Zinc Mechanically Plated (Min coating 10µm)                                  |
| Nominal Head Diameter  | 6.4mm                                                                        |
| Nominal Shank Diameter | 3.0mm (Stepped shank 3.0/ 2.6mm)                                             |
| Shear Strength         | 1200N/mm <sup>2</sup>                                                        |
| Tensile Strength       | 1950N/mm <sup>2</sup>                                                        |
| Hardness               | 53-56HR <sub>C</sub> for P8HC615; ≥56HR <sub>C</sub> for P8HC617, 22, 27, 32 |

| Part No | Description                   | Length | Collection | Order Qty |
|---------|-------------------------------|--------|------------|-----------|
| 060524  | P8HC615 High Strength Gas Pin | 15mm   | Orange     | 500       |
| 060525  | P8HC617 High Strength Gas Pin | 17mm   | Orange     | 500       |
| 060526  | P8HC622 High Strength Gas Pin | 22mm   | Orange     | 500       |
| 057553  | P8HC627 High Strength Gas Pin | 27mm   | Orange     | 500       |
| 057554  | P8HC632 High Strength Gas Pin | 32mm   | Orange     | 500       |

10 strip collation (suitable for use in 20 and 50 pin magazines) + 1 x Pulsa 800 Fuel Cell

## Stainless Steel Pins for Special Applications



|                           |                                  |
|---------------------------|----------------------------------|
| Raw Material              | Stainless Steel Grade 304        |
| Nominal Head Diameter     | 6.4mm                            |
| Nominal Shank Diameter    | 3.0mm (Stepped shank 3.0/ 2.6mm) |
| Pull-out Strength Exceeds | 1kN (in concrete)                |

| Part No    | Description                       | Length | Collection | Order Qty |
|------------|-----------------------------------|--------|------------|-----------|
| SS619TF800 | Stainless Steel Pins SS619(TF800) | 19mm   | Black      | 500       |

10 strip collation (suitable for use in 20 and 50 pin magazines) + 1 x Pulsa 800 Fuel Cell

## Product Range - Accessories



018543



018544



011773



014641



014642



019336

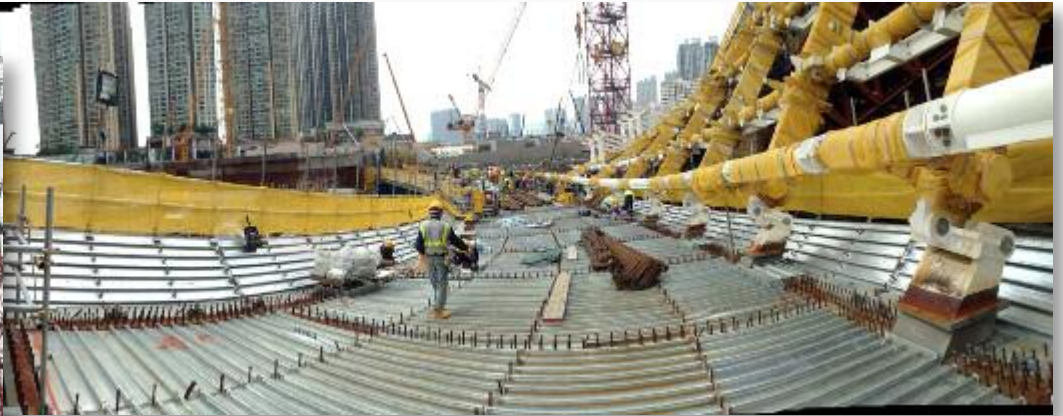
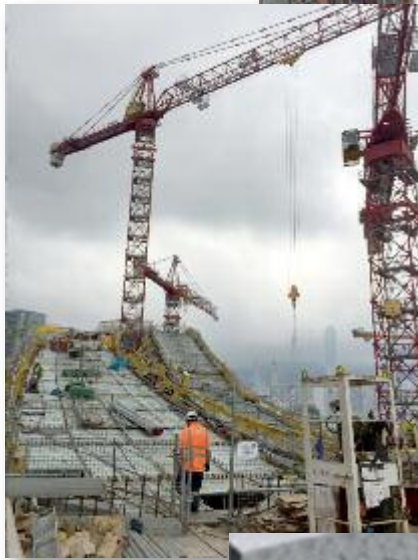


018546

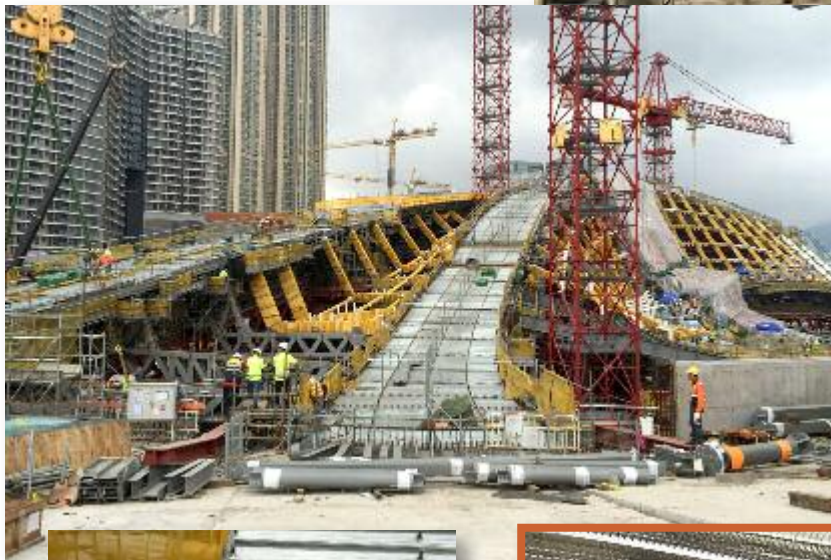


900507

| Part No | Description                                              | Order Qty |
|---------|----------------------------------------------------------|-----------|
| 018544  | 50 Pin Magazine for TrakFast™ 800 Plus                   | 1         |
| 018543  | 20 Pin Magazine for TrakFast™ 800 Plus                   | 1         |
| 014641  | Magnetic Washer Holder for TrakFast™ 800 Plus            | 1         |
| 014642  | Flat Magnetic Angle/Z-clip Holder for TrakFast™ 800 Plus | 1         |
| 018424  | TrakFast™ 800 Plus Fastener Guide                        | 1         |
| 018423  | CableMaster™ 800 Plus Fastener Guide                     | 1         |
| 013061  | Cleaning Kit - Gas Tool                                  | 1         |
| 019336  | Battery Lithium-Ion P800                                 | 1         |
| 018546  | All-in-one charger                                       | 1         |
| 900507  | In-car charger                                           | 1         |
| 011773  | Pulsa 800 Fuel Cell                                      | 1         |



- Steel decking fixing onto beam



- Drywall track fixing onto steel



- Wall tie bracket fixing



- Cable management



- Electrical conduit saddle fixing



- Wire mesh fixing onto steel column



- Wood plank fixing onto concrete

- Local made pipe saddle



# The brand that sets the standard

## Hexagon Head Drive

- Integral hexagon washer head.
- Special head shape to avoid damage during driving.
- Underside has a retaining feature to captivate the seal.

## Sealing Washer

- They are manufactured from a non conductive EPDM compound, made compatible for roofs exposed to corrosive environments.

## Dwell Section

- Unthreaded section prevents the profile riding up during fixing and allows the profile to retain its original shape.

## Thread

- Buildex fasteners are designed to give the best possible holding power with a low installation torque. As thinner high tensile sections are introduced, our engineers ensure that screws have optimum holding power and pullout strength.

## Colormatch

- Buildex colormatch is a durable coating aimed to give a perfect match with your roof color.

## HiGrip

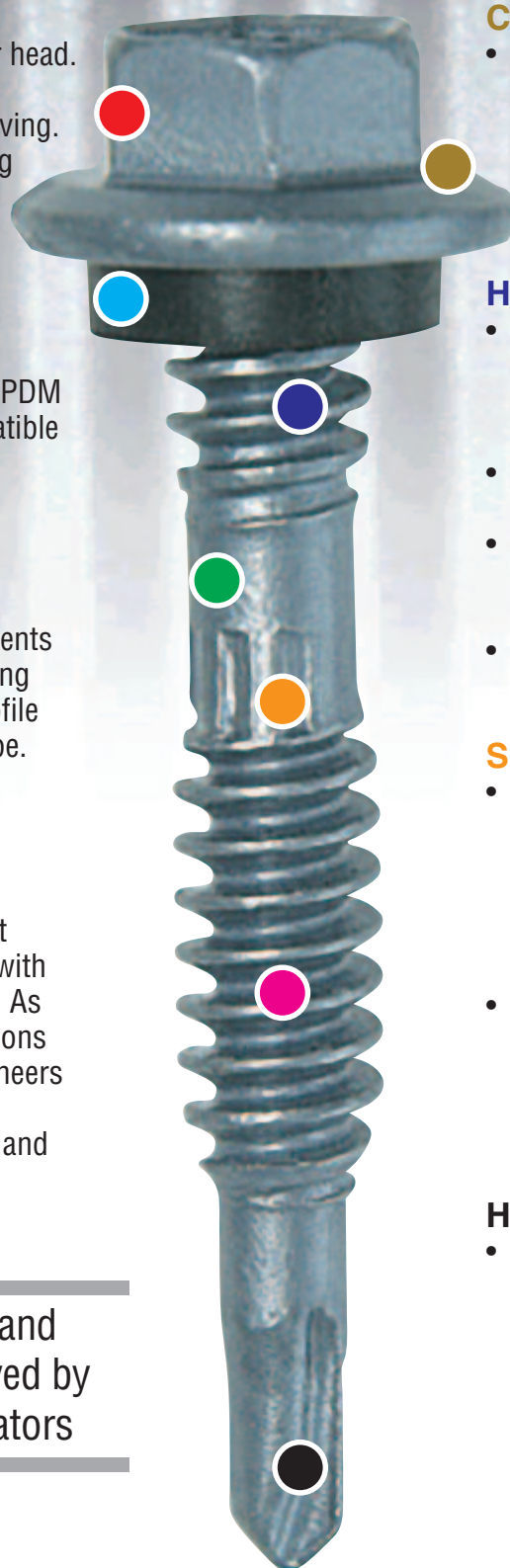
- Extrudes the roof material upwards around the fastener hole to prevent water from entering.
- Grips the roof to make a secure connection.
- Stops the roof sheet moving down the shank if the sheet is walked on.
- Ensures a water tight seal when fixing metal roofing.

## Shankguard

- When a corrosive micro climate exists beneath the roof, a damaged shank corrodes rapidly. This can occur at any time without warning, unnoticed.
- The unique shankguard feature enlarges the hole in the profile, avoiding damage to the protective coating on the shank beneath the roof.

## Hiteks Drill Point

- Buildex Hiteks point was introduced in 1982 and progressively upgraded to meet the requirements such as, lower and loads, faster drilling & changing materials. Hiteks led the revolution in drill screw technology for more than a decade and continues to do so.



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Features invented and  
continuously improved by  
Buildex - the Innovators

---

# Buildex®

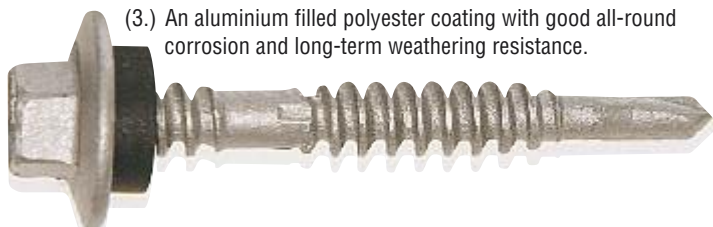
## CORROSION MANAGEMENT

### The Buildex® Solution

## PROTECTION WITH Climaseal® 3

**Climaseal®3 is an unique anti-corrosive coating system consisting of 3 distinct layers which combine to give exceptional corrosion protection:**

- (1.) A mechanically deposited zinc alloy coating giving excellent galvanic protection.
- (2.) A chromate conversion coating to passivate the zinc alloy, further inhibiting coating loss.
- (3.) An aluminium filled polyester coating with good all-round corrosion and long-term weathering resistance.



Designed to conform to AS3566 Class 3, real life atmospheric testing has confirmed that the performance of Climaseal®3 far exceeds the standard! If you want a fastener with a high-performance, corrosion resistant coating that won't let you down, consider these benefits:

- Minimal risk of coating damage during installation thanks to new, tougher coating formula.
- Better driving performance because of a smoother, harder finish.
- Superior performance in extreme temperatures, developed and tested in Australia for Australasian conditions.
- Effective sealing of roofing sheets/cladding and reduced corrosion with an improved black non-conductive EPDM seal. The black seal remains elastic in temperature extremes, and will not breakdown and allow water entry.

Climaseal®3 should be used for general external use in mild and moderate industrial, and mild marine applications

## Climaseal® 4+ THE ULTIMATE BARRIER

**The ultimate anti-corrosion coating for roof fasteners and cyclone plates.**

Real world testing has exposed many deficiencies with the acceptance of coated finishes as "deem to comply", simply because of thickness and density measurements.

The new **Climaseal®4+** coating is a layered system, combining both a high density sacrificial coating substrate, over which a barrier top coat has been applied. The Climaseal®4 is then applied by a new, environmentally friendly, processing system.

**Climaseal®4+ meets and exceeds** AS3566 Class 4 specifications. It should be used in coastal areas where salt, wind, UV and moisture are prevalent, in tropical zones and industrial areas. It is particularly recommended for use in moderate and severe marine environments.



## Roof-Lok® WIND SPEED MANAGEMENT

### Corrugated and Square Roofing Cyclone Assembly

The Buildex® ROOF-LOK® Cyclonic Assembly has been specially designed to fasten both corrugated and square roofing profiles and provides ultimate performance in cyclonic conditions.

### Ultimate Roof Holding Capability

The large contact area of ROOF-LOK® dramatically improves the ability to hold down the roof, giving the roof the best chance of survival in a cyclone. The majority of Australian Rollformers put their roofing profiles through cyclonic Low-High-Low testing at James Cook University above 8 kPa wind load pressure using Buildex® cyclonic plates. This represents the standard for performance of their roofing profiles in cyclonic conditions.



\* Please contact Ramset Technical Department for detailed product information and size selection.

## Buildex®

### DEVELOPMENT & TESTING PROGRAM

The only reliable way to determine corrosion performance is through Real World Testing. Buildex pioneered the use of “real world outdoor exposure testing for coatings development in 1994 and has continually developed and improved the performance of its coatings, providing superior corrosion protection.



• Open rack - simulates conditions on a roof

• Sheltered rack - simulates under roof and non-rain washed situation

Buildex operates and supports a research, development and testing program aimed at ensuring the customer and the building owner get the best value for money from the fasteners they purchase.

#### Real World Test Sites

In order to test the actual corrosion performance of our products, Buildex has three test sites and use a further four sites (operated by ITW Buildex & CSIRO).

These test sites are positioned at known corrosively aggressive locations around Australia.

Unlike accelerated laboratory testing, these sites expose the products to the combinations of corrosive influences that exist in the real world e.g.

- Chlorides (Marine)
- Humidity (Condensation)
- Acid Rain (Industrial)
- Ultra Violet (UV)

#### Scientific Monitoring

All the sites are scientifically monitored to determine the degree of corrosivity at each site. This is done independently by the CSIRO.

#### Results of Buildex Testing

Buildex has over 20 years experience with real world testing. Many of our products have been developed and improved as a direct result from what has been learned during the testing.

The severe conditions at these sites will give an indication of the product performance after approximately one year. The test also cover competitors' products.



Buildex Competitors

Buildex  
Climaseal 3

This panel compares Buildex product coated in Climaseal 3 with our competitors. The exposure time is after twenty-one months. **None of our competitors can compare with Buildex Climaseal 3.**



Buildex Competitors

Buildex  
Climaseal 3

This is the same panel after an exposure time of thirty-three months. To meet Class 3, the maximum observable rust presence after an exposure time of thirty months is 5%. Buildex products with Climaseal 3 clearly exceed the standard **only one product of the competitors' sample (circled) passes this test.**



# Ramset™



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