# AnkaScrew™ Tapcon™ Xtrem™ 6mm x 43mm

| Date | 20/05/2025 |
|---|---|
| Reference | TDS03183 |

Performance Related | Material | Installation Related

## Product

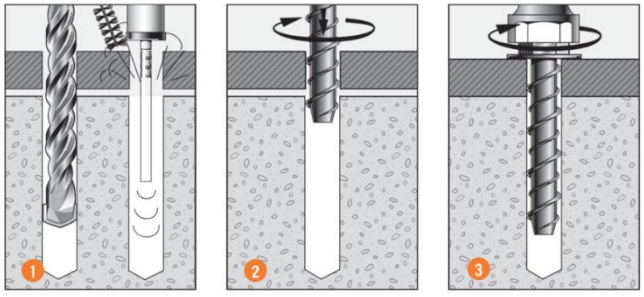
A seismic certified screw-in anchor for permanent anchoring into concrete. 6mm x 43m size is certified for seismic C1 applications.

## Compliance

**European Technical Assessment (option1) - ETA-24/0954**
**Design According to current standards:**

- AS 5216
- AS 1170.4 - Earthquake Actions
- EN 1992-4 (formerly ETAG001 Annex C, E & TR045)
- NZS 3101 (A3) Section 17 - Seismic Design C1

## Installation



1. Drill hole to correct diameter and depth. Important: Use Ramset™ Dustless Drilling System to ensure holes are clean. Alternatively, clean thoroughly with brush and remove debris by way of vacuum or hand pump, compressed air etc.
2. Using a socket wrench, screw the AnkaScrew™ Tapcon™ Xtrem" into the hole using slight pressure until the self-tapping action starts.
3. Tighten the AnkaScrew" Tapcon™ Xtrem" until flush with fixture. If resistance is experienced when tightening, unscrew anchor one turnand re-tighten. Ensure not to over tighten. Refer to tightening torque for limitations.

## Benefits, Advantages and Features

**Fire tested**

- Fire rated performance up to 120 minutes
- Highest level of European assessment for mechanical screw-in anchors
- Approved for all directions (floor, wall, overhead)
- Maximum Tensile & Shear capacities in cracked concrete
- Zinc plated steel (≥5um)
- Anchor diameter 6mm

**Fast and easy to use:**

- Install, simply screws into hole.
- Remove leaving an empty hole.

**Close to edge and for close anchor spacing:**

- Does not expand and burst concrete.

## Principal Applications

- **Seismic anchoring to Category C1**
- **Anchoring into cracked & non cracked concrete**
- **Steel framing**
- **Mechanical services**
- **Pallet racking**
- **Safety barriers**
- **Conveyors**
- **Handrails**
- **Bottom plates**

## Description and Part Numbers

| Drilled hole diameter, $d_h$ (mm) | Effective Length, $L_e$ | Maximum Fixture Thickness, $t_{fix,max}$ (mm) | AnkaScrew™ Tapcon™ Xtrem Description™ | Part No |
|---|---|---|---|---|
| 6 | 34.5 | 3 | 6mm x 43mm zinc | AST06043X |

**Effective Depth, $h_{ef}$ (mm)**

$h_{ef} = Le - t$

**t = total thickness of material(s) being fixed**

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## Installation and Static and Seismic Performance details – per anchor

### Cracked and Non-Cracked Concrete

**Non-Cracked Concrete (static & quasi-static loading )**

| Part No. | Drilled hole diameter, $d_h$ (mm) | Fixture hole diameter,$d_f$ (mm) | Anchor effective depth, $h_{ef}$ (mm) | Depth of drill hole, $h_1$ (mm) | Tightening torque, $T_r$ (Nm) | Static Shear Resistance Steel, $\phi V_{us}$ (kN)* | Non-Cracked Concrete Tension, $\phi N_{ur,ucr}$ (kN)** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Concrete Compressive Strength, f'c (MPa) | | | | |
| | | | | | | | 20 | 25 | 30 | 40 | 50 |
| AST06043X | 6 | 9 | 31.5 | 50 | 15 | 5.7 | 3.3 | 3.5 | 3.6 | 3.8 | 3.9 |

**Cracked Concrete (static & quasi-static loading )**

| Part No. | Drilled hole diameter, $d_h$ (mm) | Fixture hole diameter, $d_f$ (mm) | Anchor effective depth, $h_{ef}$ (mm) | Depth of drill hole, $h_1$ (mm) | Tightening torque, $T_r$ (Nm) | Static Shear Resistance Steel, $\phi V_{us}$ (kN)* | Cracked Concrete Tension, $\phi N_{ur,cr}$ (kN)** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Concrete Compressive Strength, f'c (MPa) | | | | |
| | | | | | | | 20 | 25 | 30 | 40 | 50 |
| AST06043X | 6 | 9 | 31.5 | 50 | 15 | 5.7 | 1.2 | 1.3 | 1.5 | 1.7 | 1.9 |

Data is based on optimum dimensions, anchor spacing $a_c = 3*h_{ef}$, = 94.5 mm and edge distance $e_c = 1.5*h_{ef}$ = 47.3 mm
For shear loads acting towards an edge where optimum dimensions are not achievable, please use the simplified strength limit state design process to verify capacity or contact Ramset™ Engineer.
Minium concrete substrate thickness is $b_m$ = 80mm.
*Note: Shear Resistance is based on steel resistance of the anchor with no influencing edge or anchor spacing.
**Note: Reduced characteristic ultimate tensile capacity = $\varphi N_{ur}$ where $\varphi$=0.67 and $N_{ur}$ is based on characteristic ultimate pull-out tensile capacity.

### Seismic – Category C1

| Part No. | Drilled hole diameter, $d_h$ (mm) | Fixture hole diameter,$d_f$ (mm) | Anchor effective depth, $h_{ef}$ (mm) | Depth of drill hole, $h_1$ (mm) | Tightening torque, $T_r$ (Nm) | C1 Seismic Shear Resistance Steel, $V_{Rd,s,seis}$ (kN)# | C1 Seismic Cracked Concrete Tension, $N_{Rd,seis,C1}$ (kN)## | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Concrete Compressive Strength, f'c (MPa) | | | | |
| | | | | | | | 20 | 25 | 30 | 40 | 50 |
| AST06043X | 6 | 9 | 31.5 | 50 | 15 | 1.2 | 0.9 | 1.0 | 1.1 | 1.3 | 1.4 |

Data is based on optimum dimensions, anchor spacing $a_c = 3*h_{ef}$, = 94.5 mm and edge distance $e_c = 1.5*h_{ef}$ = 47.3 mm
For shear loads acting towards an edge where optimum dimensions are not achievable, please use the simplified strength limit state design process to verify capacity or contact Ramset™ Engineer.
Minium concrete substrate thickness is $b_m$ = 80mm.
#Note: Shear Resistance is based on steel resistance of the anchor with no influencing edge or anchor spacing.
**Data includes annular gap reduction factor of 0.5**
**For single anchor values: Multiply $V_{Rd,s,seis}$* 1.17**

##Note: Reduced characteristic ultimate tensile capacity is governed by Pull-out resistance.
**For single anchor values: Multiply $N_{Rd,seis,C1}$ * 1.17**

For further information, please contact Ramset™
AU - PHONE: 1300 780 063 www.ramset.com.au
NZ - PHONE: 1800 RAMSET (726738) www.ramset.co.nz

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## Installation and Fire Performance details – per anchor

| Part No. | Drilled hole diameter, $d_h$ (mm) | Fixture hole diameter, $d_f$ (mm) | Anchor effective depth, $h_{ef}$ (mm) | Depth of drill hole, $h_1$ (mm) | Tightening torque, $T_r$ (Nm) | Minimum Concrete substrate thickness, $b_m$ (mm) *** | Optimum dimensions* (Fire Performance) | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Anchor spacing, $a_c$ (mm) | Edge** distance, $e_c$ (mm) |
| AST06043X | 6 | 9 | 31.5 | 50 | 15 | 80 | 126.0 | 63.0 |

*Note: For anchor spacings and edge distance less than the optimum dimensions, please contact your local Ramset Engineer.
**Note: If the fire attack is from more than one side, the edge distance of the anchor shall be ≥ 300 mm.
***Note: For performance based on smaller concrete substrate thickness, refer to iExpert Anchor Software or Ramset™ Engineer.

### Tension – Fire Performance

| Part No. | Drilled hole diameter, $d_h$ (mm) | Anchor effective depth, $h_{ef}$ (mm) | Characteristic Resistance Mode of Failure | Characteristic values of resistance to tension loads in 20 MPa to 50 MPa concrete strength | | | |
|---|---|---|---|---|---|---|---|
| | | | | Fire resistance duration (minutes) | | | |
| | | | | 30 | 60 | 90 | 120 |
| AST06043X | 6 | 31.5 | Steel Failure - $N_{Rk,s,fi}$ (kN) | 1.00 | 1.00 | 0.70 | 0.54 |
| | | | Pull-out failure concrete - $N_{Rk,p,fi}$ (kN) | **0.60** | **0.60** | **0.60** | **0.50** |
| | | | Concrete cone failure - $N_{Rk,c,fi}$ (kN) | 1.20 | 1.20 | 1.20 | 1.00 |

Note: Bold values indicate limiting load. Data in table lists all possible failure mechanisms due to fire.

### Shear – Fire Performance

| Part No. | Drilled hole diameter, $d_h$ (mm) | Anchor effective depth, $h_{ef}$ (mm) | Characteristic Resistance Mode of Failure | Characteristic values of resistance to shear loads in 20 MPa concrete strength | | | |
|---|---|---|---|---|---|---|---|
| | | | | Fire resistance duration (minutes) | | | |
| | | | | 30 | 60 | 90 | 120 |
| AST06043X | 6 | 31.5 | *Steel Failure - $V_{Rk,s,fi}$ (kN) | **1.00** | **1.00** | **0.70** | **0.54** |
| | | | Steel Failure with lever arm - $M^0_{Rk,p,fi}$ (kNm) | 0.76 | 0.76 | 0.53 | 0.41 |
| | | | **Concrete edge failure - $V_{Rk,c,fi}$ (kN) | 1.00 | 1.00 | 1.00 | 0.80 |
| | | | Concrete Pry-out failure - $V_{Rk,cp,fi}$ (kN) | 1.20 | 1.20 | 1.20 | 1.00 |

*Note 1: Bold values indicate limiting load for conditions without lever arm. Data in table lists all possible failure mechanisms due to fire.
**Note 2: Concrete edge failure based on optimal concrete edge distance for fire performance $e_c = 2xh_{ef} = 63$ mm.

For further information, please contact Ramset™
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