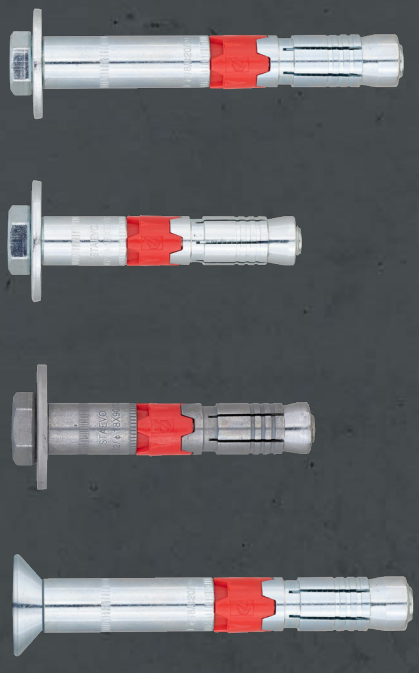
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STA-EVO



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STA-EVO

STA-EVO is a thick shield heavy duty expansion anchor designed for high performance applications in cracked and uncracked concrete. It's a torque controlled expansion anchor and through fixing design for use in heavy duty tension and shear applications.









FEATURES

- Class 8.8 bolt with Identification and traceability marks
- Available in hex and countersunk head styles
- Heavy duty washer
- Thick spacer for enhanced shear performance
- Engineered anti-rotation compression ring
- Thick shield six segment expanding clip
- Taped cone with optimal geometric design for secure permanent fastening applications

BENEFITS

- Complies with AS 5216
- NCC compliant
- ETA Assessed
- Suitable for cracked and uncracked concrete
- Fire Rated
- Seismic assessed C1& C2
- Flexible design using AS 5216 compliant software - DESIGN PRO
- Available in sizes M8 - M20

APPLICATIONS

- ✓ Structural steel beam and column connections
- ✓ Suspended applications
- ✓ Data facilities and high risk applications
- ✓ Heavy duty machinery
- ✓ Airports and transport infrastructure
- ✓ Structural applications in seismic areas
- ✓ Bridge and tunnel fit-outs
- ✓ Public infrastructure works

RANGE IDENTIFICATION

Code		Description	Material
STAEVO18090LW		Thin Panel Anchor	Carbon Steel Class 8.8 Zinc Clear
STAEVO18090LWZN		Thin Panel Anchor	Carbon Steel Class 8.8 Corrosion Resistant Zinc Nickel
STAEVO _ _ _ _ _		Hex head bolt	Carbon Steel Class 8.8 Zinc Clear
STAEVOCS _ _ _ _ _		Countersunk bolt hex socket	Carbon Steel Class 10.9 Zinc Clear

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STA-EVO HEX HEAD

☐ Hex Head Bolt - Carbon Steel Class 8.8 Zinc Clear



Zinc Clear Part No.	Description	Bolt Size (mm)	Drill Diameter (mm)	Fixture Clearance Hole (mm)	Torque Setting (Nm)	Depth of Drilled Hole (mm)	Embedment depth (mm)	Max. Fixture Thickness (mm)	Hex Head / Socket Size (mm)	ETA Option	SEISMIC Assessment	qty.	qty.
STAEVO12090	12 x 90	M8	12	14	30	85	72	15	13	Option 1	C1 & C2	25	150
STAEVO12120	12 x 120							45				25	150
STAEVO16100	16 x 100	M10	16	18	50	95	83	15	17	Option 1	C1 & C2	30	120
STAEVO16120	16 x 120							35				20	80
STAEVO16140	16 x 140							55				20	80
STAEVO18110	18 x 110	M12	18	20	80	110	97	10	19	Option 1	C1 & C2	20	80
STAEVO18120	18 x 120							20				15	60
STAEVO18150	18 x 150							50				10	60
STAEVO24140	24 x 140	M16	24	26	160	130	117	20	24	Option 1	C1 & C2	10	20
STAEVO24170	24 x 170							50				10	20
STAEVO28170	28 x 170	M20	28	31	240	160	146	20	30	Option 1	C1 & C2	5	20
STAEVO28200	28 x 200							50				5	10

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STA-EVO THIN PANEL ANCHOR

☐ Carbon Steel Class 8.8 Zinc Clear

■ Carbon Steel Class 8.8 Corrosion Resistant Zinc Nickel

Zinc Clear Part No.	Zinc Nickel Part No.	Description	Bolt Size (mm)	Drill Diameter (mm)	Fixture Clearance Hole (mm)	Torque Setting (Nm)	Depth of Drilled Hole (mm)	Embedment depth (mm)	Max. Fixture Thickness (mm)	Hex Head / Socket Size (mm)	ETA Option	SEISMIC Assessment	qty.	qty.
STAEVO18090LW		18 x 90	M12	18	20	80	90	78	12	22	Option 1	C1 & C2	20	-
	STAEVO18090LWZN*	18 x 90	M12	18	20	40	90	78	12	22	Option 1	C1 & C2	20	-

* Corrosion Resistant Zinc Nickel

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STA-EVO COUNTERSUNK HEAD

☐ Countersunk Bolt Hex Socket - Carbon Steel Class 10.9 Zinc Clear

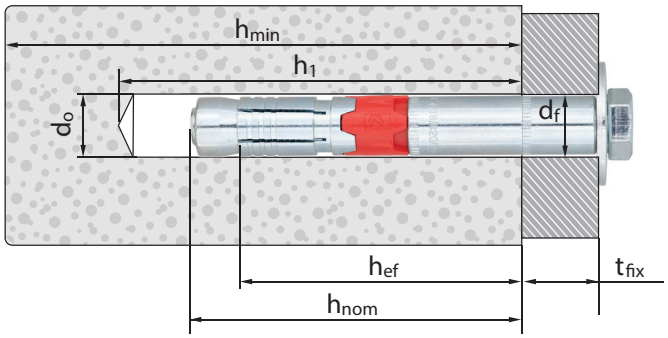


Zinc Clear Part No.	Description	Bolt Size (mm)	Drill Diameter (mm)	Fixture Clearance Hole (mm)	Torque Setting (Nm)	Depth of Drilled Hole (mm)	Embedment depth (mm)	Max. Fixture Thickness (mm)	Hex Head / Socket Size (mm)	ETA Option	SEISMIC Assessment	qty.	qty.
STAEVOCS12100	12 x 100	M8	12	14	30	85	72	25	5	Option 1	C1 & C2	25	150
STAEVOCS16100	16 x 100	M10	16	18	50	95	83	15	6	Option 1	C1 & C2	30	120
STAEVOCS18120	18 x 120	M12	18	20	80	110	97	20	8	Option 1	C1 & C2	15	60

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STA-EVO HEX HEAD

☐ Hex Head Bolt - Carbon Steel Class 8.8 Zinc Clear



d_o: Nominal diameter of drill bit
d_f: Fixture clearance hole diameter
h_{ef}: Effective anchorage depth
h_1: Depth of drilled hole
h_{nom}: Overall fastener embedment depth in the concrete
h_{min}: Minimum thickness of concrete member
t_{fix}: Fixture thickness

INSTALLATION PARAMETERS

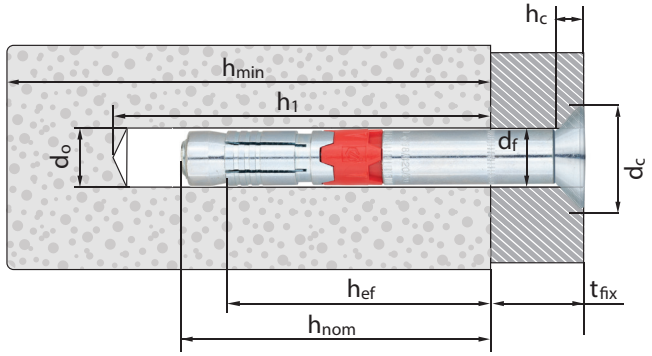
Part No.	Size [-]	Assessed ETA	d_o Drill bit diameter (mm)	d_f Fixture clearance hole (mm)	T_{inst} Torque [Nm]	L Total length of anchor Under Bolt (mm)	L_1 Total length of anchor Under Washer (mm)	h_{min} Minimum concrete thickness (mm)	h_1 Depth of drill hole (mm)	h_{nom} Embedment depth (mm)	h_{ef} Effective depth (mm)	t_{fix} Thickness of fixture (mm)	S_{min} Minimum spacing (mm)	C_{min} Minimum edge distance (mm)
STAEVO12090	M8 x 90 ø12	✓	12	14	30	90	87	120	85	72	60	15	120	60
STAEVO12120	M8 x 120 ø12	✓				120	117					45		
STAEVO16100	M10 x 100 ø16	✓	16	18	50	100	98	140	95	83	70	15	175	70
STAEVO16120	M10 x 120 ø16	✓				120	118					35		
STAEVO16140	M10 x 140 ø16	✓				140	138					55		
STAEVO18090LW	M12 x 90 ø18	✓	18	20	80	95	90	125	90	78	68	12	205	110
STAEVO18090LWZN*	M12 x 90 ø18	✓			40	95	90					12		
STAEVO18110	M12 x 110 ø18	✓	18	20	80	110	107	170	110	97	85	10	200	80
STAEVO18120	M12 x 120 ø18	✓				120	117					20		
STAEVO18150	M12 x 150 ø18	✓				150	147					50		
STAEVO24140	M16 x 140 ø24	✓	24	26	160	140	137	200	130	117	100	20	220	100
STAEVO24170	M16 x 170 ø24	✓				170	167					50		
STAEVO28170	M20 x 170 ø28	✓	28	31	240	170	166	250	160	146	125	20	320	160
STAEVO28200	M20 x 200 ø28	✓				200	196					50		

* Corrosion Resistant Zinc Nickel

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STA-EVO COUNTERSUNK HEAD

☐ Countersunk Bolt Hex Socket - Carbon Steel Class 10.9 Zinc Clear



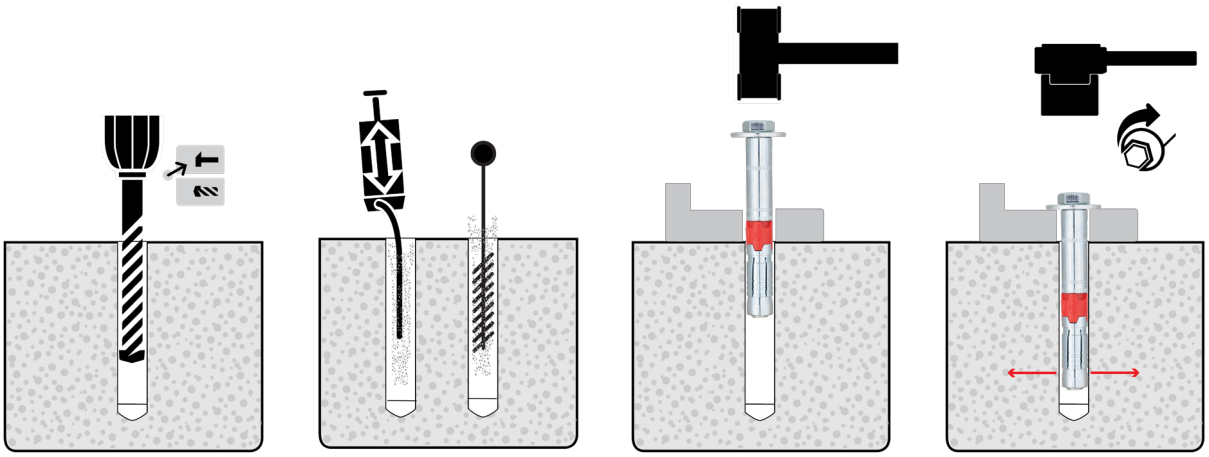
d_o: Nominal diameter of drill bit
d_f: Fixture clearance hole diameter
d_c: Diameter of countersunk head in the fixture
h_{ef}: Effective anchorage depth
h_1: Depth of drilled hole
h_{nom}: Overall fastener embedment depth in the concrete
h_{min}: Minimum thickness of concrete member
t_{fix}: Fixture thickness
h_c: Height of countersunk head in the fixture

INSTALLATION PARAMETERS

Part No.	Size [-]	Assessed ETA	Drill bit diameter d_o (mm)	Fixture clearance hole d_f (mm)	Diameter of countersunk head in the fixture d_c (mm)	Height of countersunk head in the fixture h_c (mm)	Torque T_{inst} [Nm]	Total length of anchor L (mm)	Minimum concrete thickness h_{min} (mm)	Depth of drill hole h_1 (mm)	Embedment depth h_{nom} (mm)	Effective depth h_{ef} (mm)	Thickness of fixture t_{fix} (mm)	Minimum spacing S_{min} (mm)	Minimum edge distance C_{min} (mm)
STAEVOCS12100	M8 x 100 ø12	✓	12	14	20.6	4.3	30	100	120	85	72	60	25	120	60
STAEVOCS16100	M10 x 100 ø16	✓	16	18	26.8	5.4	50	100	140	95	83	70	15	175	70
STAEVOCS18120	M12 x 120 ø18	✓	18	20	30.8	6.4	80	120	170	110	97	85	20	200	80

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INSTALLATION



DRILL HOLE
Use drill in hammer mode. Drill to specified diameter and depth for the required size.

BLOW AND CLEAN
Clean the drill hole completely of dust and debris. Use blow pump and brush.

INSTALL
Introduce the anchor until the head is in the same level of the fixture material surface. Use hammer if necessary. The anchor must be introduced through the material to be fixed.

APPLY TORQUE
Apply the nominal torque specified by using a dynamometric wrench. Design Resistance Capacities

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STA-EVO PERFORMANCE IN ACCORDANCE WITH AS 5216

Design Resistance Capacities - 20 MPa

STA-EVO Size [-]	Drill bit Diameter d_o (mm)	Embedment Depth h_{nom} (mm)	Design Capacity (Uncracked Concrete) Tension (kN)	Design Capacity (Uncracked Concrete) Shear (kN)	Design Capacity (Cracked Concrete) Tension (kN)	Design Capacity (Cracked Concrete) Shear (kN)
M8	12	72	13.3	26.4	10.7	26.4
M10	16	83	19.2	49.8	13.4	45.7
M12 x 90 (Thin Panel)	18	78	18.4	36.8	12.9	25.7
M12	18	97	25.7	60.1	18.0	60.1
M16	24	117	32.8	89.0	23.0	89.0
M20	28	146	45.8	113.4	32.1	113.4

Information presented in the above table has been derived from the product ETA (ETA 23/0838) and in accordance with AS 5216. Data is based on single anchor with no edge or spacing influence. For detailed calculations incorporating multiple anchors please download the ICCONS anchor software program for assistance, this download is available via the ICCONS website www.iccons.com.au

STA-EVO SEISMIC C1 PERFORMANCE IN ACCORDANCE WITH AS 5216

Design Resistance Capacities - 20 MPa (a_{gap} = 1.0)

PERFORMANCE DATA

STA-EVO Size [-]	Drill bit Diameter d_o (mm)	Embedment Depth h_{nom} (mm)	Design Seismic Capacity (C1) Tension (kN)	Design Seismic Capacity (C1) Shear (kN)
M8	12	72	8.5	18.5
M10	16	83	10.7	34.9
M12 x 90 (Thin Panel)	18	78	10.2	20.5
M12	18	97	14.3	36.0
M16	24	117	18.2	62.3
M20	28	146	25.5	79.5

→a_{seis}=0.85 for tension→ a_{seis}=0.85 for shear concrete pryout

STA-EVO SEISMIC C2 PERFORMANCE IN ACCORDANCE WITH AS 5216

Design Resistance Capacities - 20 MPa (a_{gap} = 1.0)

PERFORMANCE DATA

STA-EVO Size [-]	Drill bit Diameter d_o (mm)	Embedment Depth h_{nom} (mm)	Design Seismic Capacity (C2) Tension (kN)	Design Seismic Capacity (C2) Shear (kN)
M8	12	72	4.1	13.2
M10	16	83	8.1	27.0
M12 x 90 (Thin Panel)	18	78	8.4	20.5
M12	18	97	14.3	24.1
M16	24	117	18.2	44.5
M20	28	146	25.5	43.8

→a_{seis}=0.85 for tension→ a_{seis}=0.85 for shear concrete pryout

Information presented in the above table has been derived from the product ETA (ETA 23/0838) and in accordance with AS 5216. Data is based on single anchor with no edge or spacing influence. For detailed calculations incorporating multiple anchors please download the ICCONS anchor software program for assistance, this download is available via the ICCONS website www.iccons.com.au

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FIRE PERFORMANCE

Characteristic Tension Capacity $N_{Rk,fi}$ (kN)	Fire Exposure	M8	M10	M12*	M12	M16	M20
	R30	0.4	0.9	1.7	1.7	3.1	4.9
	R60	0.3	0.8	1.3	1.3	2.4	3.7
	R90	0.3	0.6	1.1	1.1	2.0	3.2
	R120	0.2	0.5	0.8	0.8	1.6	2.5

Characteristic Shear Capacity $V_{Rk,fi}$ (kN)	Fire Exposure	M8	M10	M12*	M12	M16	M20
	R30	0.4	0.9	1.7	1.7	3.1	4.9
	R60	0.3	0.8	1.3	1.3	2.4	3.7
	R90	0.3	0.6	1.1	1.1	2.0	3.2
	R120	0.2	0.5	0.8	0.8	1.6	2.5

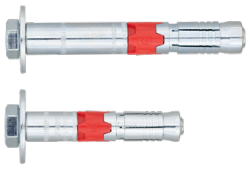
Design capacities have been determined in accordance with EN 1992-4 and incorporate a partial safety factor $\gamma_{M,fi}$ = 1.0.

The design method covers fasteners with fire exposure from one side only.

Actions on fasteners under fire exposure should be determined in accordance with National Construction Code standards and regulations.

* Refers to M12 with reduced embedment depth h_{nom}: 78mm.

MATERIAL SPECIFICATIONS







Component	Designation	STAEVO STAEVO18090LW	STAEVO18090LWZN	STAEVOCS
1	**Bolt**	DIN 931 ISO 898-1 class 8.8 Galvanised ≥5 µm ISO 4042 Zn5/An/To	DIN 931 ISO 898-1 class 8.8 Zinc Nickel ≥8 µm, sealed ISO 4042 ZnNi8/An/T2	DIN 7991 ISO 898-1 class 10.9 Galvanised ≥5 µm ISO 4042 Zn5/An/To
2	**Washer**	DIN 9021. Galvanised ≥5 µm ISO 4042 Zn5/An/To	DIN 440 Zinc Nickel ≥8 µm, sealed ISO 4042 ZnNi8/An/T2	Special Conical Washer. Galvanised ≥5 µm ISO 4042 Zn5/An/To
3	**Sleeve**	Carbon Steel. Galvanised ≥5 µm ISO 4042 Zn5/An/To	Carbon Steel. Zinc Nickel ≥8 µm, sealed ISO 4042 ZnNi8/An/T2	Carbon Steel. Galvanised ≥5 µm ISO 4042 Zn5/An/To
4	**Plastic ring**	POM (Polyoxymethylene)	POM (Polyoxymethylene)	POM (Polyoxymethylene)
5	**Expansion sleeve**	Carbon Steel. Galvanised ≥5 µm ISO 4042 Zn5/An/To	Carbon Steel. Zinc Nickel ≥8 µm, sealed ISO 4042 ZnNi8/An/T2	Carbon Steel. Galvanised ≥5 µm ISO 4042 Zn5/An/To
6	**Cone**	Hardened Carbon Steel. Galvanised ≥5 µm ISO 4042 Zn5/An/To	Hardened Carbon Steel. Zinc Nickel ≥8 µm, sealed ISO 4042 ZnNi8/An/T2	Hardened Carbon Steel. Galvanised ≥5 µm ISO 4042 Zn5/An/To

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AS 5216 Compliant NCC Anchor Design

DESIGN PRO
ADVANCED ANCHOR DESIGN SOFTWARE

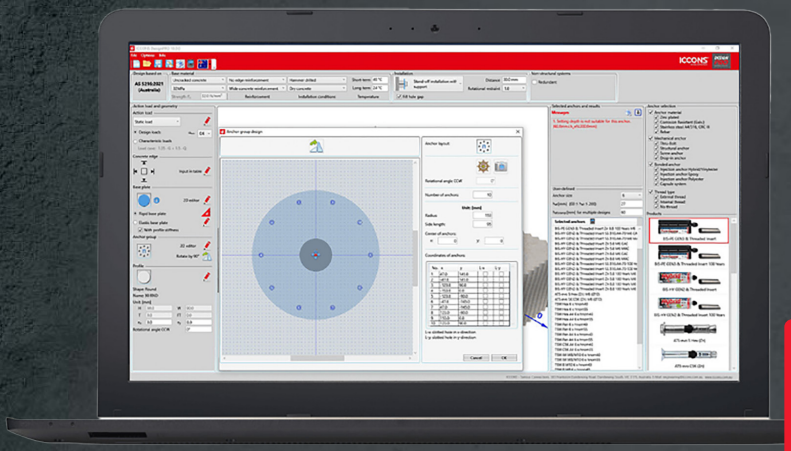
Design of fastenings under seismic actions

Design of redundant non-structural systems

Combined loading and displacement calculations

Unique all-in-one screen interface with easy data input and results display

- Interactive 3D model display for clear anchor and baseplate layout including rotation functionality
- Integrated FEA (Finite Element Analysis) for quick base plate thickness calculations
- Offers design solutions for rigid and elastic baseplates
- Flexible custom anchor and base plate geometry design for complex shapes and applications
- Utilises Australian steel profiles and material grades
- All product and all failure modes individually checked for precise anchor analysis and selection
- Summary or detailed design report options available to save or print



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