TDS | 1049.1

CONCA® THRU-BOLT™

CONCA® ECONOMY THRU-BOLT™

CONCA® ECONOMY THRU-BOLT™ is a pre-assembled a torque controlled mechanical stud anchor, which when tightened draws the tapered end of the bolt into the expander clip expanding it to create expansion forces against the wall of the drilled hole in the concrete base material.

- Heavy duty Class 5.8 Carbon steel
- Thru fixing for fast installation
- Anchor Diameter = Hole Diameter (eg M12 anchor, 12mm Hole)
- Engineered Clip designed for consistent performance and prevents anchor rotation

Carbon Steel - Galvanised

Part No.	Description	Bolt Size (mm)	Drill Size (mm)	Clearance Hole Size (mm)	Embedment Depth - $h_{embed.}$ (mm)	Fixture Thickness (mm)	Torque Setting (Nm)	qty.	qty.
ETB08080G	8 x 80 mm	M8	8	9	55	15	15	50	500
ETB08100G	8 x 100 mm	M8	8		55	35	15	50	500
ETB08120G	8 x 120 mm	M8	8		55	55	15	50	500
ETB10065G	10 x 65 mm	M10	10	12	45	10	25	25	250
ETB10090G	10 x 90 mm	M10	10		60	17	25	25	250
ETB10120G	10 x 120 mm	M10	10		60	47	25	25	250
ETB10140G	10 x 140 mm	M10	10		60	67	25	25	250
ETB12080G	12 x 80 mm	M12	12	14	60	5	45	25	250
ETB12100G	12 x 100 mm	M12	12		60	25	45	25	200
ETB12120G	12 x 120 mm	M12	12		60	45	45	25	150
ETB12140G	12 x 140 mm	M12	12		80	45	45	25	150
ETB12180G	12 x 180 mm	M12	12		80	85	45	25	100
ETB16105G	16 x 105 mm	M16	16	18	80	5	110	25	100
ETB16125G	16 x 125 mm	M16	16		100	10	110	25	100
ETB16140G	16 x 140 mm	M16	16		100	20	110	25	50
ETB16190G	16 x 190 mm	M16	16		100	70	110	25	50
ETB20125G	20 x 125 mm	M20	20	22	100	5	180	10	40
ETB20160G	20 x 160 mm	M20	20		120	20	180	10	40

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Recommended loads

			N_{rec} TENSION			V_{rec} SHEAR		
Anchor Size (mm)	Drill Size (mm)	Anchor Embedment Depth - $h_{embed.}$ (mm)	20MPa (kN)	32MPa (kN)	40MPa (kN)	20MPa (kN)	32MPa (kN)	40MPa (kN)
8	8	55	3.7	4.8	5.6	3.8	3.8	3.8
10	10	45	3.2	4.1	4.5	3.2	4.1	4.5
		60	5.3	6.9	7.9	5.6	6.1	6.1
12	12	60	4.9	6.2	6.9	4.9	6.2	6.9
		80	7.6	9.9	11.7	8.8	8.8	8.8
16	16	80	8.4	10.7	11.9	16.3	16.3	16.3
		100	11.3	14.7	17.3	16.3	16.3	16.3
20	20	100	12.2	15.5	17.3	24.6	25.5	25.5
		120	13.8	18.2	19.9	25.5	25.5	25.5

Note: Load capacities above incorporate a safety factor of 3 for concrete and 2.5 for steel. All loads are representative of a single anchor installed remote from an edge. The above information has been derived from laboratory test results using NATA calibrated equipment.
Limit State Design - Multiply the above loads by 1.8 (Concrete) and 2 (Steel) to determine the Limit State Design capacities.

STEEL GOVERNING

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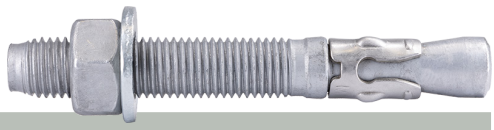
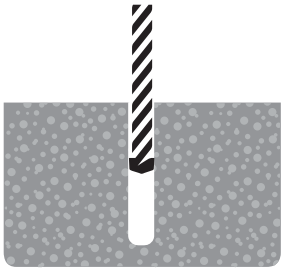
Material Specifications

CONCA® ECONOMY THRU-BOLT™



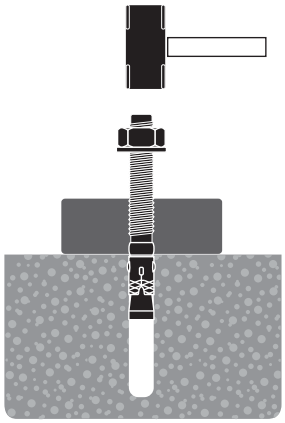
Anchor Part	Galvanised
Expander Clip	A2 stainless steel
Washer	AISI1010
Nut	Grade 5
Anchor bolt	Class 5.8
Plating	Galvanised Coating thickness 45 microns (min.)

Installation

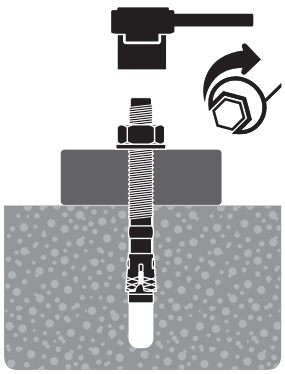


With the correct diameter drill bit, drill a hole to the correct depth.

Clean dust and other material from the hole.



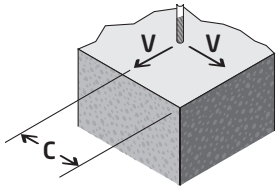
Insert anchor into position through the clearance hole in the fixture.



With correct size socket or spanner tighten anchor to specified torque. Installation complete!

Simplified Design Method

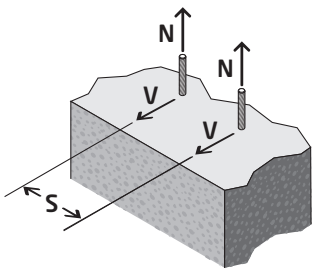
When anchor spacing or edge distances are less than critical distances, Recommended Working Load capacities must be multiplied by the appropriate reduction factors. Linear interpolation is allowed for intermediate anchor spacing and edge distances between critical and minimum distances. If an anchor/anchor group is affected by multiple reduced spacing and edge distances, the spacing and edge reduction factors must be multiplied together to give a total effect on the anchor/anchor group performance.



Spacing Reduction Factors (S_t + S_s) – tension and shear

	d (mm)	8	10		12		16		20	
	$h_{embed.}$	55	45	60	60	80	80	100	100	120
	S_{cr} (mm)	110	90	120	120	160	160	200	200	240
	$S_{min.}$ (mm)	55	45	60	60	80	80	100	100	120
Spacing (S) mm	45		0.50							
	50		0.56							
	55	0.50	0.61							
	60	0.55	0.67	0.50	0.50					
	70	0.64	0.78	0.58	0.58					
	80	0.73	0.89	0.67	0.67	0.50	0.50			
	90	0.82	1.00	0.75	0.75	0.56	0.56			
	100	0.91		0.83	0.83	0.63	0.63	0.50	0.50	
	110	1.00		0.92	0.92	0.69	0.69	0.55	0.55	
	120			1.00	1.00	0.75	0.75	0.60	0.60	0.50
	140					0.88	0.88	0.70	0.70	0.58
	160					1.00	1.00	0.80	0.80	0.67
	180							0.90	0.90	0.75
	200							1.00	1.00	0.83
	220									0.92
	240									1.00

Note: To achieve 100% anchor capacity, critical spacing (S_{cr}) is equal to 2 x h_{embed}.
Minimum spacing (S_{min}) is equal to h_{embed} at which the anchor achieves 50% of capacity.

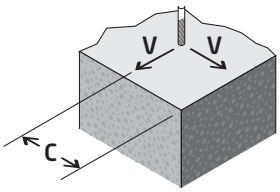


Edge Distance Reduction Factor (C_t) – tension

	d (mm)	8	10	12	16	20
	C_{cr} (mm)	96	120	144	192	240
	$C_{min.}$ (mm)	40	50	60	80	100
Spacing (S) mm	40	0.75				
	50	0.79	0.75			
	60	0.84	0.79	0.75		
	72	0.89	0.83	0.79		
	80	0.93	0.86	0.81	0.75	
	96	1	0.91	0.86	0.79	
	100		0.93	0.87	0.8	0.75
	120		1	0.93	0.84	0.79
	144			1	0.89	0.83
	192				1	0.91
	240					1

Note: To achieve 100% anchor capacity, critical edge distance (C_{cr}) is equal to 12d (12 x anchor diameter).
Minimum edge distance (C_{min}) is equal to (5d) at which the anchor achieves 75% of capacity.

Simplified Design Method



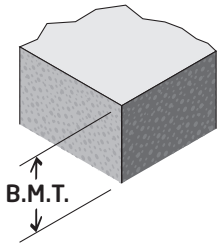
Edge Distance Reduction Factor (C_s) - shear

	d (mm)	8	10	12	16	20
	C_{cr} (mm)	96	120	144	192	240
	C_{min} (mm)	40	50	60	80	100
Spacing (S) mm	40	0.35				
	50	0.47	0.35			
	60	0.58	0.44	0.35		
	72	0.72	0.55	0.44		
	80	0.81	0.63	0.5	0.35	
	96	1	0.78	0.63	0.44	
	100	1	0.81	0.66	0.47	0.35
	120		1	0.81	0.58	0.44
	144		1	1	0.72	0.55
	192			1	1	0.78
	240				1	1

Note: To achieve 100% anchor capacity, critical edge distance (C_{cr}) is equal to 12d (12 x anchor diameter).
Minimum edge distance (C_{min}) is equal to (5d) at which the anchor achieves 35% of capacity.

Base Material Thickness

Base material thickness should be 1.5 x h_{embed}, or a minimum of 100mm, always use the greater of the two values.



Combined Tension & Shear Loading

For combined tension and shear load applications the following equations shall be satisfied;

$N_{applied} / N_{rec} \leq 1$ $V_{applied} / V_{rec} \leq 1$ $(N_{applied} / N_{rec}) + (V_{applied} / V_{rec}) \leq 1.2$

Where:

$N_{applied}$ = Applied Tension Load

N_{rec} = Recommended Tension Load

$V_{applied}$ = Applied Shear Load

V_{rec} = Recommended Shear Load

Notes

Notes

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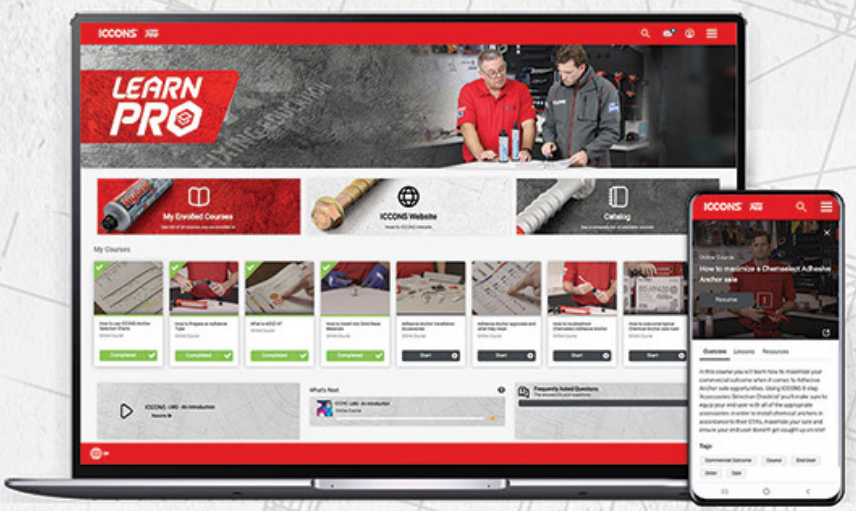

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