

THRU-BOLT



ICCONS®
Serious Connections®

STUD ANCHOR

TDS | 1007.4

High performance clip creating optimum expansion forces

Available in Clear Zinc and Galvanised



EXPANSION FORCES

M6 | M8 | M10 | M12 | M16 | M20

Carbon Steel

Galvanised



ZINC INTERNAL

GAL EXTERNAL



ICCONS® 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 hole.

- 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 high loads and prevents anchor rotation

Part No.	Part No.	M	Description	mm	mm	mm	torque Nm	qty	qty
TB06085		M6	6 x 85mm	6	50	26	5	100	1000
TB06120			6 x 120mm			61		50	
TB08080	TB08080G	M8	8 x 80mm	8	55	15	15	50	500
TB08100	TB08100G		8 x 100mm			35		50	
TB10065	TB10065G	M10	10 x 65mm	10	45	10	25	25	250
TB10090	TB10090G		10 x 90mm		17			25	
TB10120	TB10120G		10 x 120mm		47			25	
TB12080	TB12080G	M12	12 x 80mm	12	60	5	45	25	250
TB12100	TB12100G		12 x 100mm			25		25	
TB12140	TB12140G		12 x 140mm		45	25		150	
TB12180	TB12180G		12 x 180mm		85	25		100	
TB16105	TB16105G	M16	16 x 105mm	16	80	5	110	25	100
TB16125	TB16125G		16 x 125mm			10		25	100
TB16140	TB16140G		16 x 140mm		20	25		100	
TB16190	TB16190G		16 x 190mm		70	25		50	
TB20125	TB20125G	M20	20 x 125mm	20	100	5	180	10	50
TB20160	TB20160G		20 x 160mm		20			10	40
TB20200	TB20200G		20 x 200mm		60			10	30

Information contained in this technical document is based on testing by the manufacturer and should be reviewed and approved by a design professional responsible for the given application. Technical data contained in this document **does not** comply with SA TS 101:2015. For safety critical fastening applications designed in accordance with SA TS 101:2015, please refer to the Iccons website for a complete suite of compliant post-installed chemical and mechanical anchoring products.

THRU-BOLT STUD ANCHOR



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PERFORMANCE | RECOMMENDED LOADS

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Anchor Size (mm)	Drill Size (mm)	Anchor Embedment Depth (mm)	N _{rec}			V _{rec}		
			20MPa (kN)	32MPa (kN)	40MPa (kN)	20MPa (kN)	32MPa (kN)	40MPa (kN)
6	6	50	2.2	2.9	3.4	2.1	2.1	2.1
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

MATERIAL SPECIFICATIONS

Thru-Bolt Stud Anchor

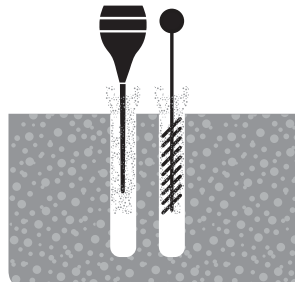


Anchor Part	Zinc Plated	Galvanised
Expander Clip	400 series S/S	400 series S/S
Washer	AISI1010	AISI1010
Nut	AISI1010	AISI1010
Anchor bolt	Class 5.8	Class 5.8
Plating	Electroplated Zinc Coating thickness 5 microns (min.)	Galvanised Coating thickness 45 microns (min.)

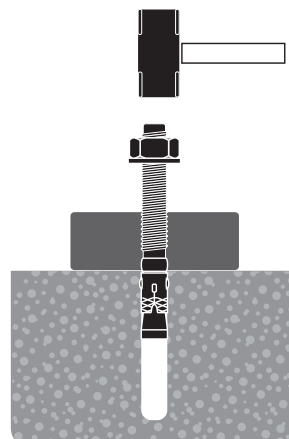
INSTALLATION



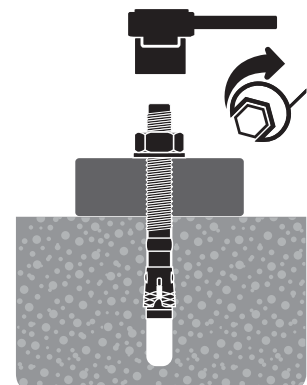
With the correct diameter drill bit, drill a hole to the correct depth.



Clean dust and other material from the hole.



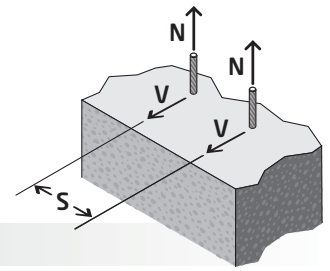
Insert anchor into position.



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



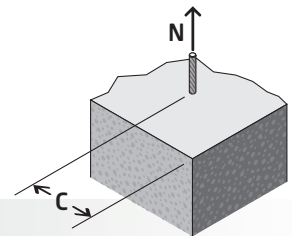
When anchor spacing or edge distances are less than critical distances, Recommended Working Load capacities must be multiplied by the appropriate reduction factors. Linear interpolation is allowed for intermediate anchor spacing and edge distances between critical and minimum distances. If an anchor/anchor 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)	6	8	10	12	16	20					
h_{embed}	50	55	45	60	60	80	80	100	100	120	
S_{cr} (mm)	100	110	90	120	120	160	160	200	200	240	
S_{min} (mm)	50	55	45	60	60	80	80	100	100	120	
Spacing (S) mm	45		0.50								
	50	0.50		0.56							
	55	0.55	0.50	0.61							
	60	0.60	0.55	0.67	0.50	0.50					
	70	0.70	0.64	0.78	0.58	0.58					
	80	0.80	0.73	0.89	0.67	0.67	0.50	0.50			
	90	0.90	0.82	1.00	0.75	0.75	0.56	0.56			
	100	1.00	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	

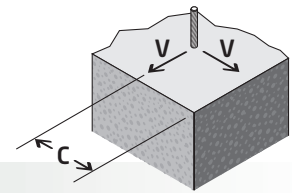
Note: To achieve 100% anchor capacity, critical spacing (S_{cr}) is equal to $2 \times h_{embed}$.
Minimum spacing (S_{min}) is equal to h_{embed} at which the anchor achieves 50% of capacity.



Edge Distance Reduction Factor (C_t) – tension

d (mm)	6	8	10	12	16	20	
C_{cr} (mm)	72	96	120	144	192	240	
C_{min} (mm)	30	40	50	60	80	100	
Edge Distance (C) mm	30	0.75					
	40	0.81	0.75				
	50	0.87	0.79	0.75			
	60	0.93	0.84	0.79	0.75		
	72	1.00	0.89	0.83	0.79		
	80		0.93	0.86	0.81	0.75	
	96		1.00	0.91	0.86	0.79	
	100			0.93	0.87	0.80	0.75
	120			1.00	0.93	0.84	0.79
	144				1.00	0.89	0.83
	192					1.00	0.91
	240						1.00

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



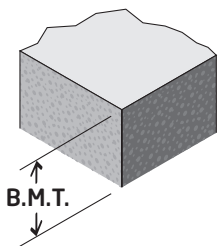
Edge Distance Reduction Factor (C_s) – shear

	d (mm)	6	8	10	12	16	20
	C_{cr} (mm)	72	96	120	144	192	240
	C_{min} (mm)	30	40	50	60	80	100
Edge Distance (C) mm	30	0.35					
	40	0.50	0.35				
	50	0.66	0.47	0.35			
	60	0.81	0.58	0.44	0.35		
	72	1.00	0.72	0.55	0.44		
	80	1.00	0.81	0.63	0.50	0.35	
	96		1.00	0.78	0.63	0.44	
	100		1.00	0.81	0.66	0.47	0.35
	120			1.00	0.81	0.58	0.44
	144			1.00	1.00	0.72	0.55
	192				1.00	1.00	0.78
	240					1.00	1.00

Note: To achieve 100% anchor capacity, critical edge distance (C_{cr}) is equal to $12d$ ($12 \times$ 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 $1.5 \times h_{embed}$ or a minimum of 75mm, 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;

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

Where:

- $N_{applied}$ = Applied Tension Load
- N_{rec} = Recommended Tension Load
- $V_{applied}$ = Applied Shear Load
- V_{rec} = Recommended Shear Load