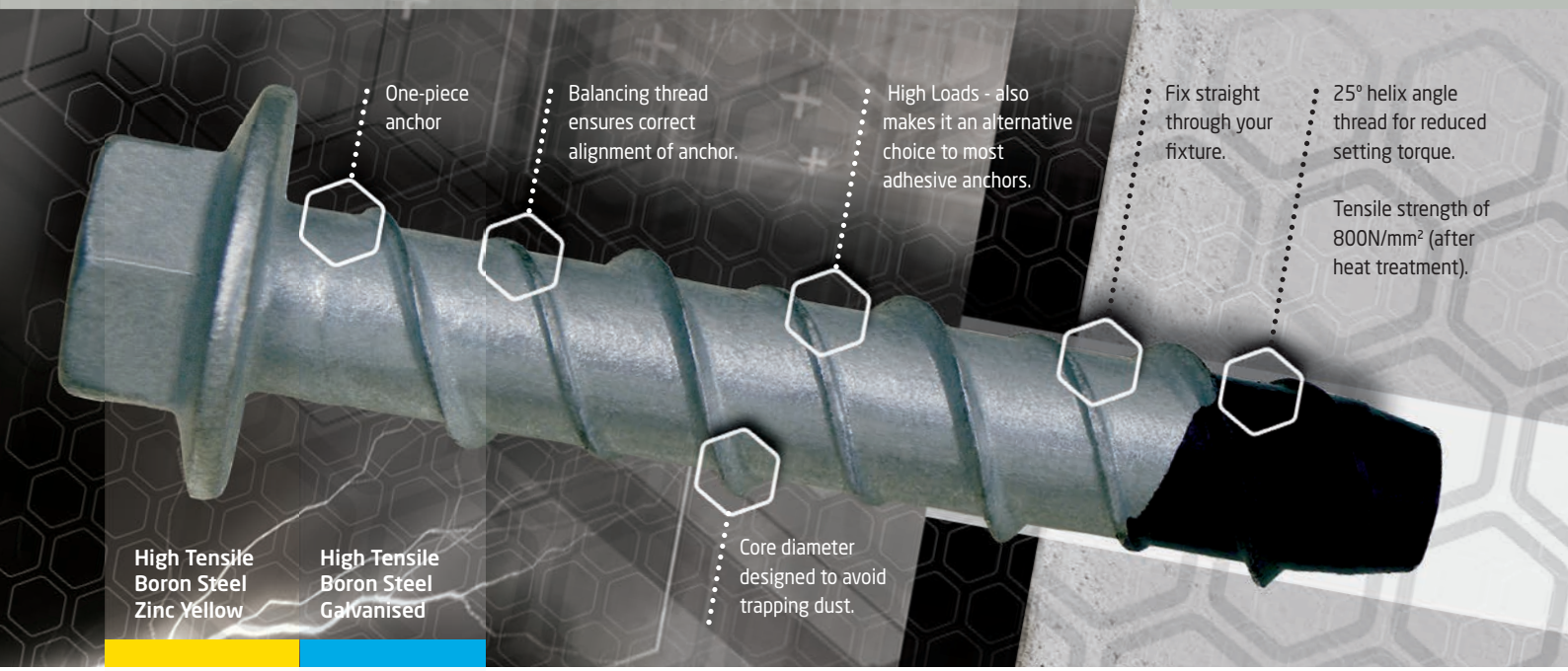
BLACK-TIP
THUNDERBOLT®

HEX HEAD MASONRY ANCHOR

ICCONS® Serious Connections®

TDS | 1004.3



ZINC INTERNAL

GAL EXTERNAL

ICCONS® Black-Tip Thunderbolt® is a high tensile self – tapping concrete and masonry anchor for use in a wide range of construction materials. Installation is simple and fast and starts with the appropriate size metric hole being drilled into the base material.
The Black-Tip Thunderbolt® is then placed through the fixture and installed with an applied clockwise downward pressure by use of a cordless impact wrench or a hand held socket wrench. The Black-Tip Thunderbolt ® produces high load performance that is achieved by the threads that engage into the base material over the full length of the bolt embedment and not just at the base of the hole.
The Black-Tip Thunderbolt ® is a truly versatile anchor as it can function in a wide range of base materials such as concrete, brick, block, stone and even timber. Unlike expansion anchors the functioning of the anchor does not create expansionary forces and this allows the anchor to be fixed closer to the edge of the base material or the spacing of the anchors closer together. The Black-Tip Thunderbolt ® is a permanent anchoring solution but equally is ideal for temporary fixing applications as the anchor can be fully removed without leaving any metal parts in the base material.

Who Uses Thunderbolts®?

- General builders
- Fencing contractors
- Shelving installers
- Warehouse racking installers
- Property maintenance
- Shop fitters
- Plumbing contractors
- Electrical contractors

Substrate Suitability

Concrete, Block, Brick, Timber, Marble, Stone.

Part No.	Part No.	Description	mm	mm	mm		qty	qty
SXB05050	SXB05050G	5 x 50mm	5	25	8	15	100	1600
SXB06030	SXB06030G	6 x 30mm	6	5	10	25	100	1600
SXB06050	SXB06050G	6 x 50mm		20			100	1200
SXB06075	SXB06075G	6 x 75mm		45			100	600
SXB06100	SXB06100G	6 x 100mm		55			100	600
SXB08050	SXB08050G	8 x 50mm	8	10	13	40	100	600
SXB08060	SXB08060G	8 x 60mm		20			100	600
SXB08075	SXB08075G	8 x 75mm		35			100	500
SXB08100	SXB08100G	8 x 100mm		60			100	400
SXB10060	SXB10060G	10 x 60mm	10	10	15	60	50	300
SXB10075	SXB10075G	10 x 75mm		25			50	300
SXB10100	SXB10100G	10 x 100mm		50			50	200
SXB10130	SXB10130G	10 x 130mm		80			25	150
SXB12075	SXB12075G	12 x 75mm	12	15	16	80	50	200
SXB12100	SXB12100G	12 x 100mm		40			50	150
SXB12150	SXB12150G	12 x 150mm		90			20	120
SXB16100	SXB16100G	16 x 100mm	16	20	21	100	15	90
SXB16150	SXB16150G	16 x 150mm		70			10	60

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. 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.

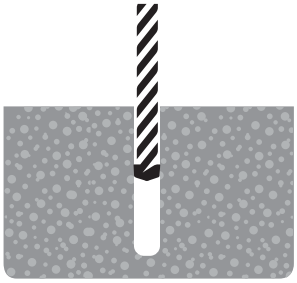
			N_{rec}				V_{rec}			
			TENSION				SHEAR			
			CONCRETE			STEEL	CONCRETE			STEEL
Anchor Size (mm)	Drill Size (mm)	Embedment Depth (mm)	20MPa (kN)	32MPa (kN)	40MPa (kN)	Heat Treated Carbon Steel (kN)	20MPa (kN)	32MPa (kN)	40MPa (kN)	Heat Treated Carbon Steel (kN)
5	5	25	**1.1**	**1.3**	**1.4**	4.3	**2.1**	**2.7**	**3.0**	2.2
6	6	30	**2.1**	**2.4**	**2.6**	7.3	**2.8**	**3.5**	**3.9**	4.6
		45	**3.3**	**3.8**	**4.2**		**5.1**	**6.4**	**7.2**	
8	8	40	**3.1**	**3.6**	**3.9**	13.6	**4.3**	**5.4**	**6.0**	8.4
		60	**5.2**	**6.1**	**6.6**		**7.8**	**9.9**	**11.1**	
10	10	50	**4.4**	**5.2**	**5.6**	22.2	**5.9**	**7.6**	**8.4**	13.8
		75	**7.7**	**9.1**	**9.8**		**10.9**	**13.8**	**15.5**	
12	12	60	**6.2**	**7.3**	**7.9**	26.9	**7.8**	**9.9**	**11.1**	16.7
		90	**11.3**	**13.3**	**14.3**		**14.4**	**18.2**	**20.3**	
16	16	80	**9.9**	**13.5**	**15.7**	59.6	**12.0**	**15.2**	**17.0**	37.0
		120	**16.9**	**23.1**	**26.8**		**22.1**	**28.0**	**31.3**	

Note: The designer shall take into consideration both Concrete and Steel load capacities. Published load capacities incorporate a safety factor of 3 for concrete and 2.5 for steel. The above information has been derived from laboratory test results using NATA calibrated equiment and all loads are representative of a single anchor installed in a hammer drilled, dry hole remote from an edge. Please contact ICCONS® engineering department for specific design applications, engineering@iccons.com.au.
Limit State Design - Multiply the above loads by 1.8 (Concrete) and 2 (Steel) to determine the Limit State Design capacities.

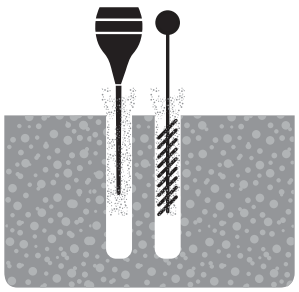
MATERIAL SPECIFICATIONS


Anchor Part	Zinc Plated (Yellow)	Mechanically Galvanised
Anchor body	Heat Treated 10B21	Heat Treated 10B21
Plating	Electroplated Zinc Coating thickness 5 microns (min.)	Galvanised Coating thickness 45 microns (min.)

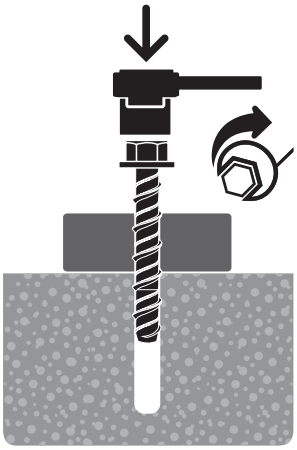
INSTALLATION



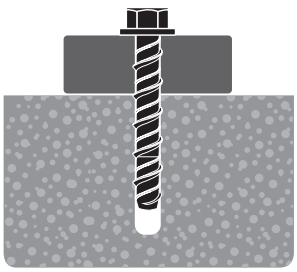
With the correct diameter drill bit, drill a hole to the depth of at least one diameter of the anchor deeper than the required embedment.



Clean dust and other material from the hole.



Install with either a socket or cordless impact driver. Apply pressure against the fixing and rotate to engage the first thread. Continue to tighten the anchor until flanged head is firmly seated against fixture.



Installation complete!

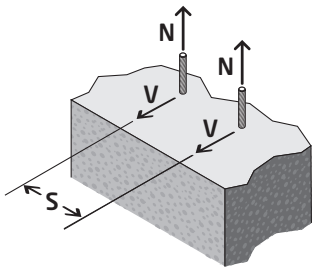
INTRODUCTION
The Black-Tip Thunderbolt® screwbolt anchor functions with little expansionary forces and facilitates installations to be made closer to each other or to a concrete slab edge.

ICCONS™ published load data is based on the required spacing and edge distances needed to achieve these loads. Load values however should be reduced when anchors are installed at decreased edge or spacing distances to those published.

ICCONS™ Spacing and Edge Distance Tables outline cumulative reduction multiplying factors required to be applied to the published load should there be a requirement to install anchors at decreased edge or spacing distances.

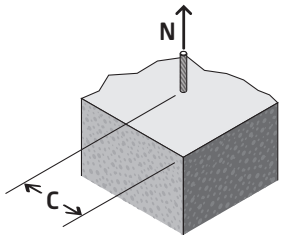
USING THE REDUCTION FACTORS

SPACING – TENSION & SHEAR (S)



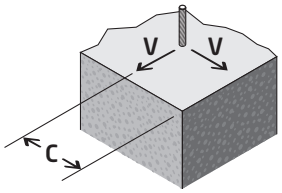
To achieve published tension and shear loads the anchors should be installed at least 12 x the anchor diameter between each other.
If spacing between anchors is closer than 12 x the anchor diameter apply appropriate reduction factor as outlined in the SPACING TABLE to the published load to ascertain the reduced load.

EDGE DISTANCE – TENSION (C)



To achieve published tension loads the anchors should be installed at least 8 x the anchor diameter from a concrete edge.
If edge distance is closer than 8 x the anchor diameter apply the appropriate reduction factor as outlined in the EDGE DISTANCE TENSION TABLE to the published load to ascertain the reduced load.

EDGE DISTANCE – SHEAR (C)



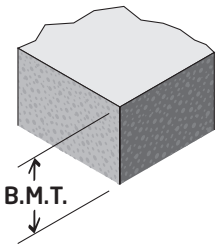
To achieve published shear loads the anchors should be installed at least 12 x the anchor diameter from a concrete edge.
If edge distance is closer than 12 x the anchor diameter apply the appropriate reduction factor as outlined in the EDGE DISTANCE SHEAR TABLE to the published load to ascertain the reduced load.

Reduction Factors

Diameter	Anchor Size (mm) 5	6	8	10	12	16	REDUCTION FACTORS SPACING (S) TENSION	SHEAR	EDGE DISTANCE (C) TENSION	SHEAR
(d)	Anchor Spacing (mm)						S_t	S_s	C_t	C_s
3(d)	15	18	24	30	36	48			**0.70**	**0.15**
4(d)	20	24	32	40	48	64	**0.50**	**0.75**	**0.76**	**0.24**
5(d)	25	30	40	50	60	80	**0.56**	**0.78**	**0.82**	**0.34**
6(d)	30	36	48	60	72	96	**0.63**	**0.81**	**0.88**	**0.43**
7(d)	35	42	56	70	84	112	**0.69**	**0.84**	**0.94**	**0.53**
8(d)	40	48	64	80	96	128	**0.75**	**0.88**	**1.00**	**0.62**
9(d)	45	54	72	90	108	144	**0.81**	**0.91**		**0.72**
10(d)	50	60	80	100	120	160	**0.88**	**0.94**		**0.81**
11(d)	55	66	88	110	132	176	**0.94**	**0.97**		**0.91**
12(d)	60	72	96	120	144	192	**1.00**	**1.00**		**1.00**

Base Material Thickness

Base material thickness should be 1.5 x $h_{embed.}$ 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;

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

Where:

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