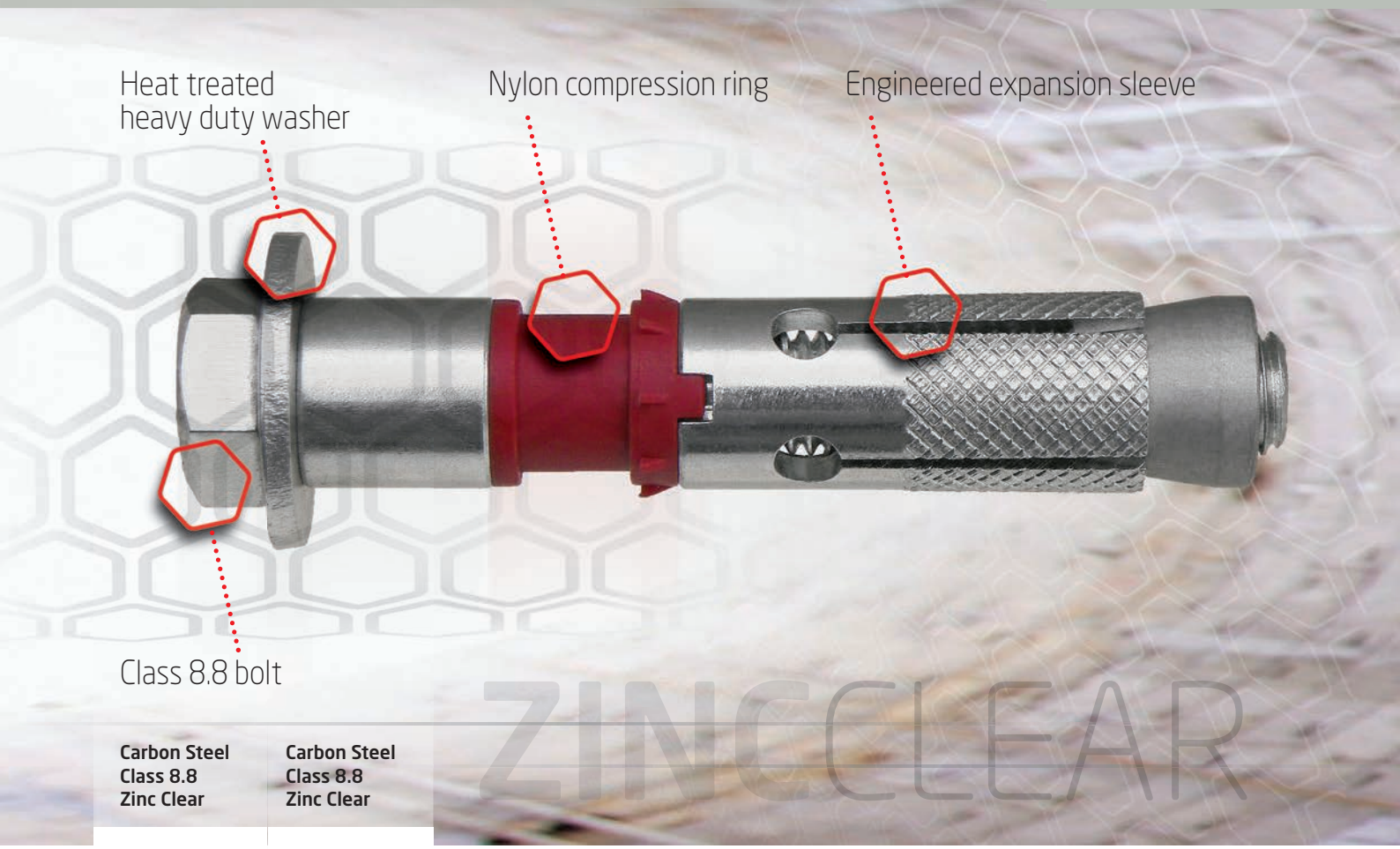
STA

HEAVY DUTY STRUCTURAL ANCHOR



Carbon Steel Class 8.8 Zinc Clear	Carbon Steel Class 8.8 Zinc Clear

ICCONS® STA "Structural Anchor" is a heavy duty, load controlled, expansion anchor purposely designed for use in structural applications where high performance is paramount. The ICCONS® STA anchor is easy to install and has a flush head finish that generally blends in aesthetically with the fixture.

APPLICATIONS:

- Structural beams and columns
- Structural connections
- Warehouse racking
- Guide rails & safety barriers
- Heavy machinery hold down anchor
- Scaffolding tie back

BENEFITS:

- High capacities, tension and shear
- Vibration resistant
- Removable

ZINC	INTERNAL	ZINC	INTERNAL									
Part No.		Part No.	M	Description	mm	mm	mm	torque Nm	qty	qty	
STA15090			M10	M10 x 90mm	15	80	17	10	50	25	75
STA15110				M10 x 110mm		90		20		25	75
STA18090	**STA18090LW**		M12	M12 x 90mm	18	75	19	15	80	25	75
STA18105	**STA18105LW**			M12 x 105mm		85		20		25	75
STA18130				M12 x 130mm		105		25		25	75
STA20110	**STA20110LW**		M14	M14 x 110mm	20	85	22	25	150	10	40
STA24130			M16	M16 x 130mm	24	105	24	25	180	10	40
STA24145				M16 x 145mm		120		25		10	40

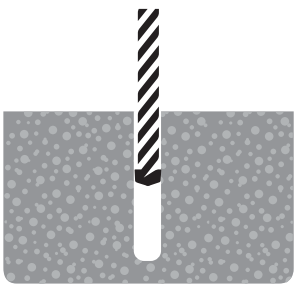
Anchor Size (mm)	Drill Size (mm)	Anchor Depth (mm)	Guide Torque (Nm)	N_{rec} ZINC CLEAR TENSION 20MPa (kN)	32MPa (kN)	40MPa (kN)	V_{rec} ZINC CLEAR SHEAR 20MPa (kN)	32MPa (kN)	40MPa (kN)
M10	15	75	50	**8.6**	**10.9**	**12.2**	**14.6**	**18.5**	**20.7**
		85		**10.1**	**12.7**	**14.2**	**15.0**	**19.0**	**21.2**
M12	18	75	80	**9.4**	**11.8**	**13.3**	**15.8**	**20.1**	**22.4**
		90		**13.6**	**17.5**	**19.1**	**17.7**	**22.6**	**25.2**
		105		**15.6**	**21.2**	**22.0**	**20.2**	**25.6**	**28.6**
M14	20	80	150	**12.6**	**15.3**	**17.7**	**18.8**	**23.7**	**26.5**
		95		**15.5**	**20.6**	**21.8**	**24.7**	**31.2**	**34.8**
M16	24	100	180	**16.7**	**21.1**	**23.6**	**23.7**	**29.9**	**33.5**
		115		**21.0**	**26.6**	**29.7**	**34.9**	**44.2**	**49.4**

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

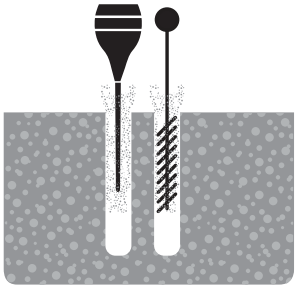
MATERIAL SPECIFICATIONS

Anchor Component	Material
Bolt	Class 8.8
Head Style	Flush Hex Head
Washer	C1035 - heat treated
Compression Ring	Engineered Nylon
Expander Sleeve	C1022
Expander Cone	C1022 heat treated with "special torque assist coating"
Socket Size	M10 - 17mm, M12 - 19mm, M14 - 22mm, M16 - 24mm
Plating	Zinc (clear) Plated in accordance with AS1789-2003

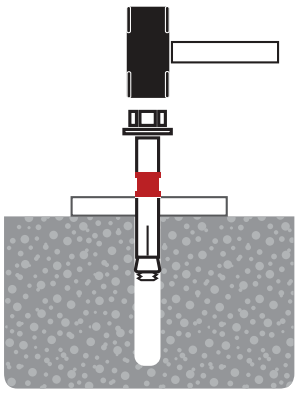
INSTALLATION



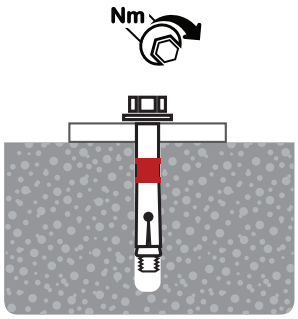
Drill the correct size hole (Y-Cutter drill bit recommended) to correct embedment depth.



Clean the hole of dust and other material.

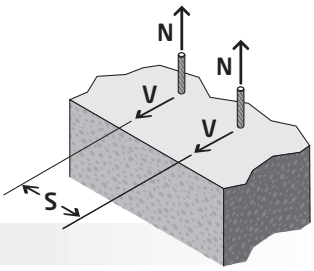


Insert the anchor so the bolt head and washer seats firmly against the fixture.



Using a torque wrench tighten the anchor to the correct guide torque.

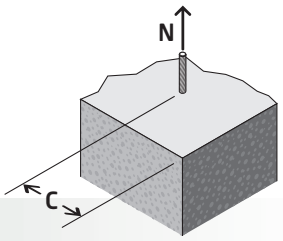
When anchor spacing or edge distances are less than critical distances, Recommended Working Load values must be multiplied by the appropriate reduction factors. Linear interpolation is allowed for intermediate anchor spacing and edge distances between critical and minimum distances. If an anchor/anchor 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)	15		18			20		24	
	$h_{embed.}$	75	85	75	90	105	80	95	100	115
	S_{cr} (mm)	150	170	150	180	210	160	190	200	230
	$S_{min.}$ (mm)	75	85	75	90	105	80	95	100	115
Spacing (S) mm	75	0.50		0.50						
	80	0.53		0.53			0.50			
	85	0.57	0.50	0.57			0.53			
	90	0.60	0.53	0.60	0.50		0.56			
	95	0.63	0.56	0.63	0.53		0.59	0.50		
	100	0.67	0.59	0.67	0.56		0.63	0.53	0.50	
	105	0.70	0.62	0.70	0.58	0.50	0.66	0.55	0.53	
	115	0.77	0.68	0.77	0.64	0.55	0.72	0.61	0.58	0.50
	150	1.00	0.88	1.00	0.83	0.71	0.94	0.79	0.75	0.65
	160		0.94		0.89	0.76	1.00	0.84	0.80	0.70
	170		1.00		0.94	0.81		0.89	0.85	0.74
	180				1.00	0.86		0.95	0.90	0.78
	190					0.90		1.00	0.95	0.83
	200					0.95			1.00	0.87
	210					1.00				0.91
	230									1.00

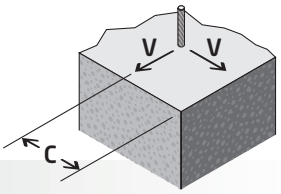
Note: Critical spacing (S_{cr}) is equal to 2 embedment depths (2 x $h_{embed.}$) at which the anchor achieves 100% of load. Minimum spacing (S_{min}) is equal to 1 embedment depth ($h_{embed.}$) at which the anchor achieves 50% of load.



Edge Distance Reduction Factor (C_t) - tension

	d (mm)	15	18	20	24
	C_{cr} (mm)	180	216	240	288
	$C_{min.}$ (mm)	75	90	100	120
Edge Distance (C) mm	75	0.75			
	85	0.77			
	90	0.79	0.75		
	100	0.81	0.77	0.75	
	120	0.86	0.81	0.79	0.75
	160	0.95	0.89	0.86	0.81
	180	1.00	0.93	0.89	0.84
	216		1.00	0.96	0.89
	230			0.98	0.91
	240			1.00	0.93
	288				1.00

Note: For anchors loaded in tension, the critical edge distance (C_{cr}) is equal to 12 anchor diameters (12d) at which the anchor achieves 100% of load. Minimum edge distance (C_{min}) is equal to 5 anchor diameters (5d) at which the anchor achieves 75% of load.



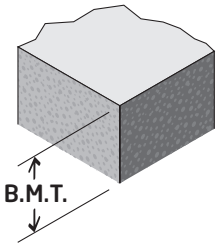
Edge Distance Reduction Factor (C_s) - shear

	d (mm)	15	18	20	24
	C_{cr} (mm)	180	216	240	288
	$C_{min.}$ (mm)	75	90	100	120
Edge Distance (C) mm	75	0.35			
	85	0.41			
	90	0.44	0.35		
	100	0.50	0.40	0.35	
	120	0.63	0.50	0.44	0.35
	160	0.88	0.71	0.63	0.50
	180	1.00	0.81	0.72	0.58
	216		1.00	0.89	0.72
	230			0.95	0.78
	240			1.00	0.81
	288				1.00

Note: For anchors loaded in Shear, the critical edge distance (C_{cr}) is equal to 12 anchor diameters (12d) at which the anchor achieves 100% of load. Minimum edge distance (C_{min}) is equal to 5 anchor diameters (5d) at which the anchor achieves 35% of load.

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