SLEEVE ANCHORS

Bremick Sleeve Anchors are one piece, preassembled, torque controlled, mechanical anchors consisting of a threaded plow bolt with a cold formed coned end assembled with a pressed carbon steel expansion sleeve. During setting the cone is drawn into the anchor sleeve which provides sufficient expansion force to provide a lock to the base material through a combination of friction and base material deformation. Pretension in the installed anchor is preserved by pre engineered deformations in the sleeve that are designed to crush during the installation process.

Bremick Sleeve Anchors are available in all head forms including, Hexagonal, Flush, countersunk, hook and eye bolts. **Bremick Sleeve Anchors** are also available in Stainless steel, zinc plated and Galvanised.

APPLICATIONS

Quality, medium duty torque controlled deformation type sleeve anchor, for general use in concrete, solid masonry and stone.

FEATURES

- Fast and simple installation
- Ideal for through fastening.
- Reliable force controlled setting
- Follow up expansion
- Immediate loading
- Suitable for over head application
- Available in Zinc Plate, Galvanised and Stainless Steel
- Available in a wide variety of head types.

ANCILLARY PRODUCTS CLEANING TOOLS

For Brushes and Blow Pumps please refer to the Chemical Injection System section of this book.

SUGGESTED SPECIFICATION

Carbon Steel Sleeve Anchor

Carbon steel expansion sleeve anchors shall be preassembled with a ……..style head.

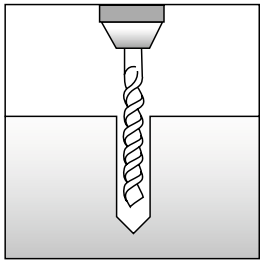
All components shall be zinc plated/galvanised and shall be sourced form Bremick Pty Ltd.

Stainless Steel Sleeve Anchor

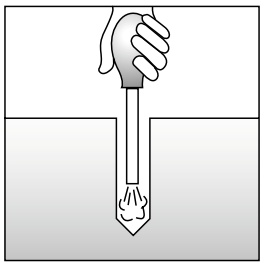
Stainless steel expansion sleeve anchors shall be manufactured form Stainless Steel 316 and preassembled with a ……..style head and shall be sourced form Bremick Pty Ltd.

SETTING INSTRUCTIONS

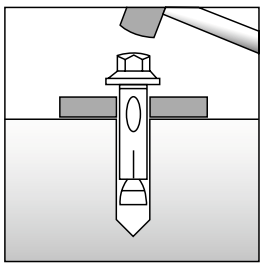
1: Drill
Drill hole in base material to specified diameter and depth. Care should be taken to control hole diameter.



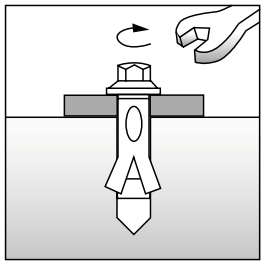
2: Clean
Blow out dust and drilling fragments.



3: Insert
Insert anchor into hole and drive until nut and washer are flush with the material surface.



4: Set
Using a wrench expand anchor by tightening to specified torque.

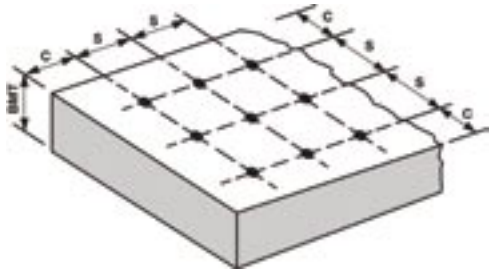


SLEEVE ANCHORS

HEXAGONAL FLANGE HEAD ZINC PLATED, GALVANISED AND 316 STAINLESS STEEL

TABLE 1 - INSTALLATION DETAILS

FASTENER DETAILS			INSTALLATION DETAILS									
Anchor/ Drill Diameter	Thread Size	Anchor Length	Effective Embedment Depth	Characteristic Anchor Spacing (Tension & Shear)	Characteristic Edge Distance (Tension & Shear)	Minimum Anchor Spacing (Tension & Shear)	Minimum Edge Distance (Tension & Shear)	Minimum Base Material Thickness	Maximum Fixture Thickness	Clearance Hole Diameter (Fixture)	Installation Torque (Concrete)	Width Across Flats
D_o (mm)	D (mm)	L (mm)	h_t (mm)	S_{cr} (mm)	C_{cr} (mm)	S_{min} (mm)	C_{min} (mm)	h_{min} (mm)	t_{fix} (mm)	D_c (mm)	T_{inst} (Nm)	SW (mm)
6	M4.5	40	**30**	65	80	30	30	40	10	8	2.0	8
		60	**40**	65	80	30	30	50	20	8	2.0	8
6.5	M5	25	**21**	65	80	30	30	26	4	8	2.5	8
		35	**30**	65	80	30	30	40	5	8	2.5	8
		55	**40**	65	80	30	30	50	15	8	2.5	8
		75	**55**	65	80	30	30	70	20	8	2.5	8
8	M6	40	**25**	80	100	40	40	35	15	10	6.0	10
		65	**35**	80	100	40	40	45	30	10	6.0	10
		85	**50**	80	100	40	40	65	35	10	6.0	10
10	M8	40	**35**	100	120	50	50	45	5	12	11.0	13
		50	**40**	100	120	50	50	50	10	12	11.0	13
		60	**50**	100	120	50	50	65	10	12	11.0	13
		75	**55**	100	120	50	50	70	20	12	11.0	13
		100	**60**	100	120	50	50	80	40	12	11.0	13
		125	**75**	100	120	50	50	95	50	12	11.0	13
12	M10	60	**40**	120	140	60	60	50	20	14	22.0	16
		75	**50**	120	140	60	60	63	25	14	22.0	16
		100	**60**	120	140	60	60	75	40	14	22.0	16
		130	**80**	120	140	60	60	100	50	14	22.0	16
16	M12	65	**55**	160	190	80	80	70	10	18	38.0	18
		110	**70**	160	190	80	80	90	40	18	38.0	18
		145	**95**	160	190	80	80	120	50	18	38.0	18
20	M16	75	**60**	200	240	100	100	75	15	22	95.0	24
		105	**80**	200	240	100	100	100	25	22	95.0	24
		150	**100**	200	240	100	100	125	50	22	95.0	24



Notation, Spacing, Edge Distance & BMT

HEXAGONAL FLANGE HEAD ZINC PLATED, GALVANISED AND 316 STAINLESS STEEL

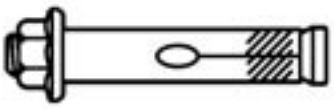
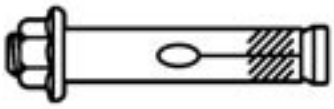


TABLE 2 - PERFORMANCE DATA - CONCRETE (CHARACTERISTIC RESISTANCE)

INSTALLATION DETAILS			CHARACTERISTIC RESISTANCE IN CONCRETE (Nrukc, Vrukc)									
			25MPa Concrete (fc)		32MPa Concrete (fc)		40MPa Concrete (fc)		50MPa Concrete (fc)		65MPa Concrete (fc)	
Hole/ Drill Diameter (mm)	Major Thread Diameter (mm)	Embedment Depth (mm)	Tension (NRukc) KN	Shear (Vrukc) KN	Tension (NRukc) KN	Shear (Vrukc) KN	Tension (NRukc) KN	Shear (Vrukc) KN	Tension (NRukc) KN	Shear (Vrukc) KN	Tension (NRukc) KN	Shear (Vrukc) KN
6	M4.5	30	8	7.5	9.1	8.6	10.3	9.7	11.3	10.6	13.0	12.2
		40	10.8	7.8	12.3	8.9	13.9	10.1	15.2	11.0	17.6	12.7
6.5	M5	21	5.2	7.5	5.9	8.6	6.7	9.7	7.3	10.6	8.5	12.2
		30	8.0	7.5	9.1	8.6	10.3	9.7	11.3	10.6	13.0	12.2
		40	10.8	7.8	12.3	8.9	13.9	10.1	15.2	11.0	17.6	12.7
		55	14.7	7.9	16.8	9.0	19.0	10.2	20.7	11.1	24.0	12.9
		65	20.2	8.2	23.0	9.3	26.1	10.6	28.5	11.6	32.9	13.4
8	M6	25	6.2	11.0	7.1	12.5	8.0	14.2	8.7	15.5	10.1	17.9
		35	10.2	11.8	11.6	13.5	13.2	15.2	14.4	16.6	16.6	19.2
		50	14.1	12.0	16.1	13.7	18.2	15.5	19.9	16.9	23.0	19.6
10	M8	30	8.6	17.5	9.8	20.0	11.1	22.6	12.1	24.7	14.0	28.5
		35	9.0	18.2	10.3	20.7	11.6	23.5	12.7	25.7	14.7	29.7
		40	14.7	18.7	16.8	21.3	19.0	24.1	20.7	26.4	24.0	30.5
		50	20.2	18.9	23.0	21.5	26.1	24.4	28.5	26.6	32.9	30.8
		55	28.5	19.2	32.5	21.9	36.8	24.8	40.2	27.1	46.5	31.3
		60	40.2	19.3	45.8	22.0	51.9	24.9	56.7	27.2	65.5	31.5
		70	43.8	20.2	49.9	23.0	56.5	26.1	61.8	28.5	71.4	32.9
		75	58.9	21.2	67.1	24.2	76.0	27.3	83.0	29.9	96.0	34.6
12	M10	40	12.6	23.7	14.4	27.0	16.3	30.6	17.8	33.4	20.5	38.6
		45	13.2	23.7	15.0	27.0	17.0	30.6	18.6	33.4	21.5	38.6
		50	20.1	23.8	22.9	27.1	25.9	30.7	28.3	33.6	32.8	38.8
		60	27.6	24.0	31.5	27.4	35.6	31.0	38.9	33.8	45.0	39.1
		80	40.3	25.2	45.9	28.7	52.0	32.5	56.8	35.5	65.7	41.1
16	M12	55	20.2	36.7	23.0	41.8	26.1	47.3	28.5	51.7	32.9	59.8
		70	30.3	37.2	34.5	42.4	39.1	48.0	42.7	52.5	49.4	60.6
		95	42.2	39.3	48.1	44.8	54.4	50.7	59.5	55.4	68.8	64.1
20	M16	60	26.2	56.7	29.9	64.6	33.8	73.1	36.9	79.9	42.7	92.4
		80	47.2	57.2	53.8	65.2	60.9	73.8	66.6	80.7	76.9	93.2
		100	83.9	59.3	95.6	67.6	108.2	76.5	118.3	83.6	136.8	96.7

All above Values are Characteristic Values in concrete with anchors installed at embedment depths, as shown.
Characterisic Resistances are derived from test data and are valid for products supplied by Bremick Pty Ltd only.
All testing was undertaken in unreinforced concrete with a minimum sample rate (n) of 10.
All Shear Values are Single Shear, where shear loads were applied normal to, and towards the edge of the concrete.

SLEEVE ANCHORS



HEXAGONAL FLANGE HEAD ZINC PLATED, GALVANISED AND 316 STAINLESS STEEL

TABLE 3 - PERFORMANCE DATA - CONCRETE (WORKING STRESS DESIGN)

INSTALLATION DETAILS			WORKIING STRESS DESIGN - DESIGN CAPACITIES IN CONCRETE (WLN, WLV)									
			25MPa Concrete (fc)		32MPa Concrete (fc)		40MPa Concrete (fc)		50MPa Concrete (fc)		65MPa Concrete (fc)	
Hole/ Drill Diameter (mm)	Major Thread Diameter (mm)	Embedment Depth (mm)	Tension (WLN) KN	Shear (WLV) KN	Tension (WLN) KN	Shear (WLV) KN	Tension (WLN) KN	Shear (WLV) KN	Tension (WLN) KN	Shear (WLV) KN	Tension (WLN) KN	Shear (WLV) KN
6	M4.5	30	2.7	2.5	3.0	2.9	3.4	3.2	3.8	3.5	4.3	4.1
		40	3.6	2.6	4.1	3.0	4.6	3.4	5.1	3.7	5.9	4.2
6.5	M5	21	1.7	2.5	2.0	2.9	2.2	3.2	2.4	3.5	2.8	4.1
		30	2.7	2.5	3.0	2.9	3.4	3.2	3.8	3.5	4.3	4.1
		40	3.6	2.6	4.1	3.0	4.6	3.4	5.1	3.7	5.9	4.2
		55	4.9	2.6	5.6	3.0	6.3	3.4	6.9	3.7	8.0	4.3
		65	6.7	2.7	7.7	3.1	8.7	3.5	9.5	3.9	11.0	4.5
8	M6	25	2.1	3.7	2.4	4.2	2.7	4.7	2.9	5.2	3.4	6.0
		35	3.4	3.9	3.9	4.5	4.4	5.1	4.8	5.5	5.5	6.4
		50	4.7	4.0	5.4	4.6	6.1	5.2	6.6	5.6	7.7	6.5
10	M8	30	2.9	5.8	3.3	6.7	3.7	7.5	4.0	8.2	4.7	9.5
		35	3.0	6.1	3.4	6.9	3.9	7.8	4.2	8.6	4.9	9.9
		40	4.9	6.2	5.6	7.1	6.3	8.0	6.9	8.8	8.0	10.2
		50	6.7	6.3	7.7	7.2	8.7	8.1	9.5	8.9	11.0	10.3
		55	9.5	6.4	10.8	7.3	12.3	8.3	13.4	9.0	15.5	10.4
		60	13.4	6.4	15.3	7.3	17.3	8.3	18.9	9.1	21.8	10.5
		70	14.6	6.7	16.6	7.7	18.8	8.7	20.6	9.5	23.8	11.0
		75	19.6	7.1	22.4	8.1	25.3	9.1	27.7	10.0	32.0	11.5
12	M10	40	4.2	7.9	4.8	9.0	5.4	10.2	5.9	11.1	6.8	12.9
		45	4.4	7.9	5.0	9.0	5.7	10.2	6.2	11.1	7.2	12.9
		50	6.7	7.9	7.6	9.0	8.6	10.2	9.4	11.2	10.9	12.9
		60	9.2	8.0	10.5	9.1	11.9	10.3	13.0	11.3	15.0	13.0
		80	13.4	8.4	15.3	9.6	17.3	10.8	18.9	11.8	21.9	13.7
16	M12	55	6.7	12.2	7.7	13.9	8.7	15.8	9.5	17.2	11.0	19.9
		70	10.1	12.4	11.5	14.1	13.0	16.0	14.2	17.5	16.5	20.2
		95	14.1	13.1	16.0	14.9	18.1	16.9	19.8	18.5	22.9	21.4
20	M16	60	8.7	18.9	10.0	21.5	11.3	24.4	12.3	26.6	14.2	30.8
		80	15.7	19.1	17.9	21.7	20.3	24.6	22.2	26.9	25.6	31.1
		100	28.0	19.8	31.9	22.5	36.1	25.5	39.4	27.9	45.6	32.2

All above Values are Design Values for anchors installed in concrete with anchors installed at characteristic embedment depths, as shown.
Working Stress Design Values have been derived with a safety factor of 3, and are valid for products supplied by Bremick Pty Ltd only.
All Shear Values are Single Shear.

HEXAGONAL FLANGE HEAD ZINC PLATED, GALVANISED AND 316 STAINLESS STEEL

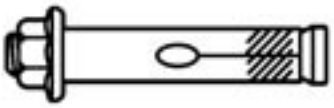


TABLE 4 - PERFORMANCE DATA - CONCRETE (LIMIT STATE DESIGN)

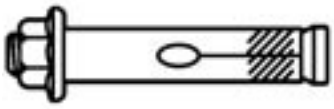
INSTALLATION DETAILS			LIMIT STATE DESIGN - DESIGN CAPACITIES IN CONCRETE (NRD,c ,VRD ,c)									
			25MPa Concrete (fc)		32MPa Concrete (fc)		40MPa Concrete (fc)		50MPa Concrete (fc)		65MPa Concrete (fc)	
Hole/ Drill Diameter (mm)	Major Thread Diameter (mm)	Embedment Depth (mm)	Tension (NRD,c) KN	Shear (VRD,c) KN	Tension (NRD,c) KN	Shear (VRD,c) KN	Tension (NRD,c) KN	Shear (VRD,c) KN	Tension (NRD,c) KN	Shear (VRD,c) KN	Tension (NRD,c) KN	Shear (VRD,c) KN
6	M4.5	30	3.2	3.0	3.6	3.4	4.1	3.9	4.5	4.2	5.2	4.9
		40	4.3	3.1	4.9	3.6	5.6	4.0	6.1	4.4	7.0	5.1
6.5	M5	21	2.1	3.0	2.4	3.4	2.7	3.9	2.9	4.2	3.4	4.9
		30	3.2	3.0	3.6	3.4	4.1	3.9	4.5	4.2	5.2	4.9
		40	4.3	3.1	4.9	3.6	5.6	4.0	6.1	4.4	7.0	5.1
		55	5.9	3.2	6.7	3.6	7.6	4.1	8.3	4.5	9.6	5.2
		65	8.1	3.3	9.2	3.7	10.4	4.2	11.4	4.6	13.2	5.3
8	M6	25	2.5	4.4	2.8	5.0	3.2	5.7	3.5	6.2	4.0	7.2
		35	4.1	4.7	4.7	5.4	5.3	6.1	5.8	6.7	6.7	7.7
		50	5.6	4.8	6.4	5.5	7.3	6.2	8.0	6.8	9.2	7.8
10	M8	30	3.4	7.0	3.9	8.0	4.4	9.0	4.9	9.9	5.6	11.4
		35	3.6	7.3	4.1	8.3	4.6	9.4	5.1	10.3	5.9	11.9
		40	5.9	7.5	6.7	8.5	7.6	9.6	8.3	10.5	9.6	12.2
		50	8.1	7.6	9.2	8.6	10.4	9.8	11.4	10.7	13.2	12.3
		55	11.4	7.7	13.0	8.8	14.7	9.9	16.1	10.8	18.6	12.5
		60	16.1	7.7	18.3	8.8	20.7	10.0	22.7	10.9	26.2	12.6
		70	17.5	8.1	20.0	9.2	22.6	10.4	24.7	11.4	28.6	13.2
		75	23.6	8.5	26.9	9.7	30.4	10.9	33.2	12.0	38.4	13.8
12	M10	40	5.0	9.5	5.7	10.8	6.5	12.2	7.1	13.4	8.2	15.5
		45	5.3	9.5	6.0	10.8	6.8	12.2	7.4	13.4	8.6	15.5
		50	8.0	9.5	9.2	10.9	10.4	12.3	11.3	13.4	13.1	15.5
		60	11.0	9.6	12.6	10.9	14.2	12.4	15.6	13.5	18.0	15.6
		80	16.1	10.1	18.4	11.5	20.8	13.0	22.7	14.2	26.3	16.4
16	M12	55	8.1	14.7	9.2	16.7	10.4	18.9	11.4	20.7	13.2	23.9
		70	12.1	14.9	13.8	17.0	15.6	19.2	17.1	21.0	19.8	24.3
		95	16.9	15.7	19.2	17.9	21.8	20.3	23.8	22.2	27.5	25.6
20	M16	60	10.5	22.7	11.9	25.9	13.5	29.3	14.8	32.0	17.1	37.0
		80	18.9	22.9	21.5	26.1	24.4	29.5	26.6	32.3	30.8	37.3
		100	33.6	23.7	38.3	27.0	43.3	30.6	47.3	33.4	54.7	38.7

All above Values are Design Values in concrete with anchors installed at characteristic embedment depths, as shown, and are valid for products supplied by Bremick Pty Ltd only

Limit State Design Values have been derived in accordance with AS 3600-2001 with an expected coefficient of varience of 20%.

All Shear Values are Single Shear.

SLEEVE ANCHORS



HEXAGONAL FLANGE HEAD ZINC PLATED, GALVANISED AND 316 STAINLESS STEEL

TABLE 5 - PERFORMANCE DATA - CONCRETE (RECOMMENDED LOADS)

INSTALLATION DETAILS			RECOMMENDED LOADS IN CONCRETE (Nrec,c/ Vrec,c)									
			25MPa Concrete (fc)		32MPa Concrete (fc)		40MPa Concrete (fc)		50MPa Concrete (fc)		65MPa Concrete (fc)	
Hole/ Drill Diameter (mm)	Major Thread Diameter (mm)	Embedment Depth (mm)	Tension (Nrec,c) KN	Shear (Vrec,c) KN	Tension (Nrec,c) KN	Shear (Vrec,c) KN	Tension (Nrec,c) KN	Shear (Vrec,c) KN	Tension (Nrec,c) KN	Shear (Vrec,c) KN	Tension (Nrec,c) KN	Shear (Vrec,c) KN
6	M4.5	30	2.0	1.9	2.3	2.1	2.6	2.4	2.8	2.6	3.3	3.1
		40	2.7	2.0	3.1	2.2	3.5	2.5	3.8	2.7	4.4	3.2
6.5	M5	21	1.3	1.9	1.5	2.1	1.7	2.4	1.8	2.6	2.1	3.1
		30	2.0	1.9	2.3	2.1	2.6	2.4	2.8	2.6	3.3	3.1
		40	2.7	2.0	3.1	2.2	3.5	2.5	3.8	2.7	4.4	3.2
		55	3.7	2.0	4.2	2.3	4.7	2.5	5.2	2.8	6.0	3.2
		65	5.1	2.1	5.8	2.3	6.5	2.6	7.1	2.9	8.2	3.3
8	M6	25	1.6	2.8	1.8	3.1	2.0	3.5	2.2	3.9	2.5	4.5
		35	2.6	3.0	2.9	3.4	3.3	3.8	3.6	4.2	4.2	4.8
		50	3.5	3.0	4.0	3.4	4.5	3.9	5.0	4.2	5.7	4.9
10	M8	30	2.2	4.4	2.5	5.0	2.8	5.6	3.0	6.2	3.5	7.1
		35	2.3	4.6	2.6	5.2	2.9	5.9	3.2	6.4	3.7	7.4
		40	3.7	4.7	4.2	5.3	4.7	6.0	5.2	6.6	6.0	7.6
		50	5.1	4.7	5.8	5.4	6.5	6.1	7.1	6.7	8.2	7.7
		55	7.1	4.8	8.1	5.5	9.2	6.2	10.0	6.8	11.6	7.8
		60	10.1	4.8	11.5	5.5	13.0	6.2	14.2	6.8	16.4	7.9
		70	11.0	5.1	12.5	5.8	14.1	6.5	15.4	7.1	17.8	8.2
		75	14.7	5.3	16.8	6.0	19.0	6.8	20.8	7.5	24.0	8.6
12	M10	40	3.2	5.9	3.6	6.8	4.1	7.6	4.4	8.4	5.1	9.7
		45	3.3	5.9	3.8	6.8	4.3	7.6	4.7	8.4	5.4	9.7
		50	5.0	6.0	5.7	6.8	6.5	7.7	7.1	8.4	8.2	9.7
		60	6.9	6.0	7.9	6.8	8.9	7.7	9.7	8.5	11.2	9.8
		80	10.1	6.3	11.5	7.2	13.0	8.1	14.2	8.9	16.4	10.3
16	M12	55	5.1	9.2	5.8	10.5	6.5	11.8	7.1	12.9	8.2	15.0
		70	7.6	9.3	8.6	10.6	9.8	12.0	10.7	13.1	12.3	15.2
		95	10.6	9.8	12.0	11.2	13.6	12.7	14.9	13.9	17.2	16.0
20	M16	60	6.6	14.2	7.5	16.2	8.4	18.3	9.2	20.0	10.7	23.1
		80	11.8	14.3	13.5	16.3	15.2	18.4	16.6	20.2	19.2	23.3
		100	21.0	14.8	23.9	16.9	27.1	19.1	29.6	20.9	34.2	24.2

All above Values are Design Values for anchors installed in concrete with anchors installed at characteristic embedment depths, as shown.
Recommended Loads have been derived with a Safety factor of 4.
All Shear Values are Single Shear.

DESIGN DATA - REDUCTION FACTORS HEXAGONAL FLANGE HEAD ZINC PLATED, GALVANISED AND 316 STAINLESS STEEL

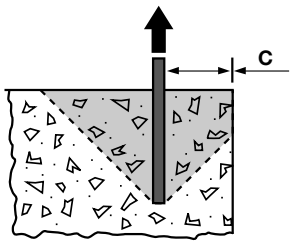


TABLE 6 - ØcN - EDGE REDUCTION FACTORS - TENSION ONLY

Anchor Size d, (mm)	EDGE DISTANCE IN CONCRETE (mm) 30 (mm)	35 (mm)	40 (mm)	50 (mm)	60 (mm)	80 (mm)	90 (mm)	100 (mm)	120 (mm)	140 (mm)
6	0.75	0.80	0.84	0.87	0.90	1.00				
6.5	0.75	0.80	0.84	0.87	0.90	1.00				
8			0.80	0.85	0.88	0.94	0.95	1.00		
10				0.80	0.83	0.89	0.91	0.94	1.00	
12					0.80	0.84	0.85	0.88	0.94	1.00

Anchor Size d, (mm)	EDGE DISTANCE IN CONCRETE (mm) 80 (mm)	100 (mm)	120 (mm)	140 (mm)	160 (mm)	180 (mm)	190 (mm)	200 (mm)	220 (mm)	240 (mm)
16	0.80	0.85	0.88	0.92	0.94	0.98	1.00			
20		0.80	0.83	0.86	0.89	0.91	0.92	0.94	0.97	1.00

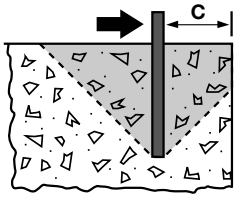
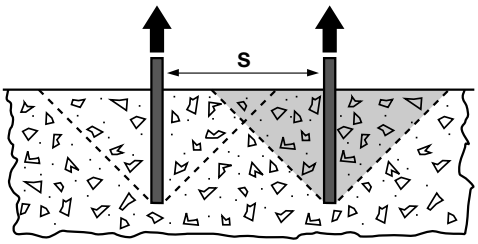


TABLE 7 - ØcV - EDGE REDUCTION FACTORS - SHEAR ONLY

Anchor Size d, (mm)	EDGE DISTANCE IN CONCRETE (mm) 30 (mm)	35 (mm)	40 (mm)	50 (mm)	60 (mm)	70 (mm)	80 (mm)	100 (mm)	120 (mm)	140 (mm)
6	0.50	0.53	0.58	0.69	0.80	0.91	1.00			
6.5	0.50	0.53	0.58	0.69	0.80	0.91	1.00			
8			0.50	0.55	0.68	0.76	0.86	1.00		
10				0.50	0.57	0.64	0.71	0.86	1.00	
12					0.50	0.55	0.62	0.74	0.86	1.00

Anchor Size d, (mm)	EDGE DISTANCE IN CONCRETE (mm) 80 (mm)	100 (mm)	120 (mm)	140 (mm)	160 (mm)	180 (mm)	190 (mm)	200 (mm)	220 (mm)	240 (mm)
16	0.50	0.58	0.68	0.76	0.86	0.95	1.00			
20		0.50	0.57	0.64	0.71	0.79	0.82	0.85	0.95	1.00

SLEEVE ANCHORS



DESIGN DATA - REDUCTION FACTORS HEXAGONAL FLANGE HEAD ZINC PLATED, GALVANISED AND 316 STAINLESS STEEL

TABLE 8 - ØsN, ØsV - ANCHOR SPACING REDUCTION FACTORS - TENSION AND SHEAR

Anchor Size d, (mm)	ANCHOR SPACING, S (MM) - DISTANCE BETWEEN ANCHORS - CENTRE TO CENTRE									
	30 (mm)	35 (mm)	40 (mm)	45 (mm)	50 (mm)	60 (mm)	65 (mm)	80 (mm)	100 (mm)	120 (mm)
6	0.50	0.55	0.60	0.70	0.80	0.90	1.00			
6.5	0.50	0.55	0.60	0.70	0.80	0.90	1.00			
8			0.50	0.55	0.60	0.75	0.80	1.00		
10					0.50	0.60	0.65	0.80	1.00	
12						0.50	0.55	0.70	0.90	1.00

Anchor Size d, (mm)	ANCHOR SPACING, S (MM) - DISTANCE BETWEEN ANCHORS - CENTRE TO CENTRE									
	80 (mm)	90 (mm)	100 (mm)	110 (mm)	120 (mm)	130 (mm)	140 (mm)	160 (mm)	180 (mm)	200 (mm)
16	0.50	0.55	0.65	0.70	0.75	0.80	0.85	1.00		
20			0.50	0.55	0.60	0.65	0.70	0.80	0.90	1.00

STEEL CAPACITIES HEXAGONAL FLANGE HEAD - ZINC PLATED & GALVANISED

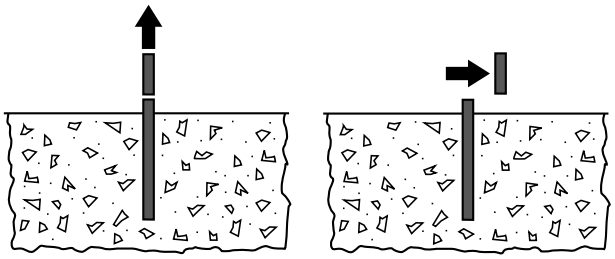


TABLE 10A

DIMENSIONS				CHARACTERISTIC VALUES Characteristic Resistance			DESIGN VALUES Working Stress Design		Limit State Design AS3600		Recommended Loads	
Hole/Drill Diameter D (mm)	Thread Size A_c (mm^2)	Core Area A_s (mm^2)	Stress Area	Tensile $NR_{uk,s}$ KN	Yield $NR_{yk,s}$ KN	Shear $V_{Rk,s}$ KN	Tensile WL_N KN	Shear WL_V KN	Tensile $N_{RD\ u,s}$ KN	Shear $V_{RD\ ,s}$ KN	Tensile $N_{RD\ u,s}$ KN	Shear $V_{RD\ ,s}$ KN
6.5	M5	13.42	14.20	5.68	3.41	3.33	1.89	1.11	2.84	1.66	1.42	0.83
8	M6	18.99	20.10	8.04	4.82	4.71	2.68	1.57	4.02	2.35	2.01	1.18
10	M8	34.70	36.60	14.64	8.78	8.61	4.88	2.87	7.32	4.30	3.66	2.15
12	M10	55.10	58.00	23.20	13.92	13.67	7.73	4.56	11.60	6.83	5.80	3.42
16	M12	80.21	84.30	33.72	20.23	19.89	11.24	6.63	16.86	9.95	8.43	4.97
20	M16	150.33	157.00	62.80	37.68	37.28	20.93	12.43	31.40	18.64	15.70	9.32

All above Values are Mechanical properties, steel and are only applicable to products supplied by Bremick Pty Ltd.
Characterisic Values are Ultimate Values derived in accordance with Australian Standard 4291.1-2000 / ISO 898.1 - 1999.
All Shear Values are Single Shear.

STEEL CAPACITIES HEXAGONAL FLANGE HEAD - 316 STAINLESS

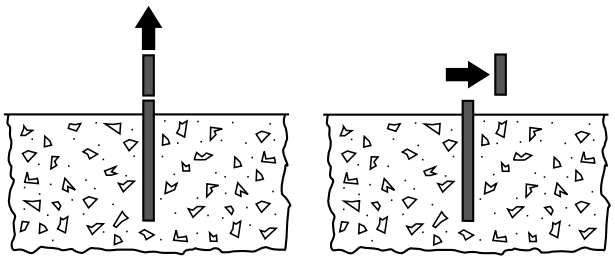
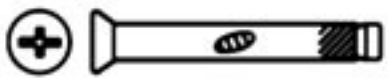


TABLE 10B

DIMENSIONS				CHARACTERISTIC VALUES Characteristic Resistance			DESIGN VALUES Working Stress Design		Limit State Design AS3600		Recommended Loads	
Hole/Drill Diameter D (mm)	Thread Size A_c (mm^2)	Core Area A_s (mm^2)	Stress Area	Tensile $NR_{uk,s}$ KN	Yield $NR_{yk,s}$ KN	Shear $V_{Rk,s}$ KN	Tensile WL_N KN	Shear WL_V KN	Tensile $N_{RD\ u,s}$ KN	Shear $V_{RD\ ,s}$ KN	Tensile $N_{RD\ u,s}$ KN	Shear $V_{RD\ ,s}$ KN
6	M4.5	10.68	11.30	7.91	5.09	4.64	2.64	1.55	3.96	2.32	1.98	1.16
8	M6	18.99	20.10	14.07	9.05	8.24	4.69	2.75	7.04	4.12	3.52	2.06
10	M8	34.70	36.60	25.62	16.47	15.06	8.54	5.02	12.81	7.53	6.41	3.77
12	M10	55.10	58.00	40.60	26.10	23.91	13.53	7.97	20.30	11.96	10.15	5.98

All above Values are Mechanical properties, steel and are only applicable to products supplied by Bremick Pty Ltd.
Characterisic Values are Ultimate Values derived in accordance with Australian Standard 4291.1-2000 / ISO 898.1 - 1999.
All Shear Values are Single Shear.

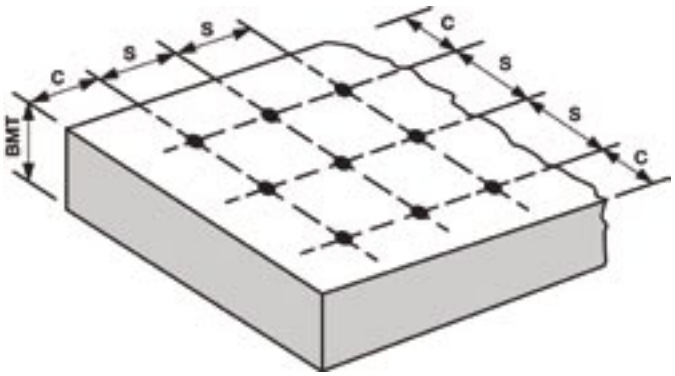
SLEEVE ANCHORS



COUNTERSUNK HEAD ZINC PLATED

TABLE 1 - INSTALLATION DETAILS

FASTENER DETAILS			INSTALLATION DETAILS									
Anchor/ Drill Diameter	Thread Size	Anchor Length	Effective Embedment Depth	Characteristic Anchor Spacing (Tension & Shear)	Characteristic Edge Distance (Tension & Shear)	Minimum Anchor Spacing (Tension & Shear)	Minimum Edge Distance (Tension & Shear)	Minimum Base Material Thickness	Maximum Fixture Thickness	Clearance Hole Diameter (Fixture)	Installation Torque (Concrete)	Phillips Driver
D_o (mm)	D (mm)	L (mm)	h_t (mm)	S_{cr} (mm)	C_{cr} (mm)	S_{min} (mm)	C_{min} (mm)	h_{min} (mm)	t_{fix} (mm)	D_c (mm)	T_{inst} (Nm)	PH#
6.5	M5	35	**30**	65	80	30	30	38	5	7	2.5	PH3
		55	**40**	65	80	30	30	50	15	7	2.5	PH3
		75	**55**	65	80	30	30	70	20	7	2.5	PH3
		100	**65**	65	80	30	30	85	35	7	2.5	PH3
8	M6	40	**25**	80	100	40	40	35	15	8	6.0	PH4
		60	**35**	80	100	40	40	45	25	8	6.0	PH4
		85	**50**	80	100	40	40	65	35	8	6.0	PH4
10	M8	75	**55**	100	120	50	50	70	20	10	11.0	PH4
		100	**60**	100	120	50	50	75	40	10	11.0	PH4
		125	**75**	100	120	50	50	95	50	10	11.0	PH4



Notation, Spacing, Edge Distance & BMT

COUNTERSUNK HEAD ZINC PLATED

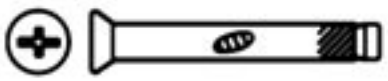


TABLE 2 - PERFORMANCE DATA - CONCRETE (CHARACTERISTIC RESISTANCE)

INSTALLATION DETAILS			CHARACTERISTIC RESISTANCE IN CONCRETE (Nrukc, Vrukc)									
Hole/ Drill Diameter	Major Thread Diameter	Embedment Depth	25MPa Concrete (fc)		32MPa Concrete (fc)		40MPa Concrete (fc)		50MPa Concrete (fc)		65MPa Concrete (fc)	
			Tension (NRukc)	Shear (Vrukc)	Tension (NRukc)	Shear (Vrukc)	Tension (NRukc)	Shear (Vrukc)	Tension (NRukc)	Shear (Vrukc)	Tension (NRukc)	Shear (Vrukc)
(mm)	(mm)	(mm)	KN	KN	KN	KN	KN	KN	KN	KN	KN	KN
6.5	M5	30	8.0	7.5	9.1	8.6	10.3	9.7	11.3	10.6	13.0	12.2
		40	10.8	7.8	12.3	8.9	13.9	10.1	15.2	11.0	17.6	12.7
		55	14.7	7.9	16.8	9.0	19.0	10.2	20.7	11.1	24.0	12.9
		65	20.2	8.2	23.0	9.3	26.1	10.6	28.5	11.6	32.9	13.4
8	M6	25	6.2	11.0	7.1	12.5	8.0	14.2	8.7	15.5	10.1	17.9
		35	10.2	11.8	11.6	13.5	13.2	15.2	14.4	16.6	16.6	19.2
		50	14.1	12.0	16.1	13.7	18.2	15.5	19.9	16.9	23.0	19.6
10	M8	55	28.5	19.2	32.5	21.9	36.8	24.8	40.2	27.1	46.5	31.3
		60	40.2	19.3	45.8	22.0	51.9	24.9	56.7	27.2	65.5	31.5
		75	58.9	21.2	67.1	24.2	76.0	27.3	83.0	29.9	96.0	34.6

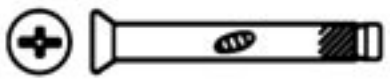
All above Values are Characteristic Values in concrete with anchors installed at embedment depths, as shown.
Characterisic Resistances are derived from test data and are valid for products supplied by Bremick Pty Ltd only.
All testing was undertaken in unreinforced concrete with a minimum sample rate (n) of 10.
All Shear Values are Single Shear, where shear loads were applied normal to, and towards the edge of the concrete.

TABLE 3 - PERFORMANCE DATA - CONCRETE (WORKING STRESS DESIGN)

INSTALLATION DETAILS			WORKIING STRESS DESIGN - DESIGN CAPACITIES IN CONCRETE (WLN, WLV)									
Hole/ Drill Diameter	Major Thread Diameter	Embedment Depth	25MPa Concrete (fc)		32MPa Concrete (fc)		40MPa Concrete (fc)		50MPa Concrete (fc)		65MPa Concrete (fc)	
			Tension (WLN)	Shear (WLV)	Tension (WLN)	Shear (WLV)	Tension (WLN)	Shear (WLV)	Tension (WLN)	Shear (WLV)	Tension (WLN)	Shear (WLV)
(mm)	(mm)	(mm)	KN	KN	KN	KN	KN	KN	KN	KN	KN	KN
6.5	M5	30	2.7	2.5	3.0	2.9	3.4	3.2	3.8	3.5	4.3	4.1
		40	3.6	2.6	4.1	3.0	4.6	3.4	5.1	3.7	5.9	4.2
		55	4.9	2.6	5.6	3.0	6.3	3.4	6.9	3.7	8.0	4.3
		65	6.7	2.7	7.7	3.1	8.7	3.5	9.5	3.9	11.0	4.5
8	M6	25	2.1	3.7	2.4	4.2	2.7	4.7	2.9	5.2	3.4	6.0
		35	3.4	3.9	3.9	4.5	4.4	5.1	4.8	5.5	5.5	6.4
		50	4.7	4.0	5.4	4.6	6.1	5.2	6.6	5.6	7.7	6.5
10	M8	55	9.5	6.4	10.8	7.3	12.3	8.3	13.4	9.0	15.5	10.4
		60	13.4	6.4	15.3	7.3	17.3	8.3	18.9	9.1	21.8	10.5
		75	19.6	7.1	22.4	8.1	25.3	9.1	27.7	10.0	32.0	11.5

All above Values are Design Values for anchors installed in concrete with anchors installed at characteristic embedment depths, as shown.
Working Stress Design Values have been derived with a safety factor of 3, and are valid for products supplied by Bremick Pty Ltd only.
All Shear Values are Single Shear.

SLEEVE ANCHORS



COUNTERSUNK HEAD ZINC PLATED

TABLE 4 - PERFORMANCE DATA - CONCRETE (LIMIT STATE DESIGN)

INSTALLATION DETAILS			LIMIT STATE DESIGN - DESIGN CAPACITIES IN CONCRETE (NRD,c ,VRD ,c)									
			25MPa Concrete (fc)		32MPa Concrete (fc)		40MPa Concrete (fc)		50MPa Concrete (fc)		65MPa Concrete (fc)	
Hole/ Drill Diameter (mm)	Major Thread Diameter (mm)	Embedment Depth (mm)	Tension (NRD,c) KN	Shear (VRD,c) KN	Tension (NRD,c) KN	Shear (VRD,c) KN	Tension (NRD,c) KN	Shear (VRD,c) KN	Tension (NRD,c) KN	Shear (VRD,c) KN	Tension (NRD,c) KN	Shear (VRD,c) KN
6.5	M5	30	3.2	3.0	3.6	3.4	4.1	3.9	4.5	4.2	5.2	4.9
		40	4.3	3.1	4.9	3.6	5.6	4.0	6.1	4.4	7.0	5.1
		55	5.9	3.2	6.7	3.6	7.6	4.1	8.3	4.5	9.6	5.2
		65	8.1	3.3	9.2	3.7	10.4	4.2	11.4	4.6	13.2	5.3
8	M6	25	2.5	4.4	2.8	5.0	3.2	5.7	3.5	6.2	4.0	7.2
		35	4.1	4.7	4.7	5.4	5.3	6.1	5.8	6.7	6.7	7.7
		50	5.6	4.8	6.4	5.5	7.3	6.2	8.0	6.8	9.2	7.8
10	M8	55	11.4	7.7	13.0	8.8	14.7	9.9	16.1	10.8	18.6	12.5
		60	16.1	7.7	18.3	8.8	20.7	10.0	22.7	10.9	26.2	12.6
		75	23.6	8.5	26.9	9.7	30.4	10.9	33.2	12.0	38.4	13.8

All above Values are Design Values in concrete with anchors installed at characteristic embedment depths, as shown, and are valid for products supplied by Bremick Pty Ltd only
Limit State Design Values have been derived in accordance with AS 3600-2001 with an expected coefficient of varience of 20%.
All Shear Values are Single Shear.

TABLE 5 - PERFORMANCE DATA - CONCRETE (RECOMMENDED LOADS)

INSTALLATION DETAILS			RECOMMENDED LOADS IN CONCRETE (Nrec,c/ Vrec,c)									
			25MPa Concrete (fc)		32MPa Concrete (fc)		40MPa Concrete (fc)		50MPa Concrete (fc)		65MPa Concrete (fc)	
Hole/ Drill Diameter (mm)	Major Thread Diameter (mm)	Embedment Depth (mm)	Tension (Nrec,c) KN	Shear (Vrec,c) KN	Tension (Nrec,c) KN	Shear (Vrec,c) KN	Tension (Nrec,c) KN	Shear (Vrec,c) KN	Tension (Nrec,c) KN	Shear (Vrec,c) KN	Tension (Nrec,c) KN	Shear (Vrec,c) KN
6.5	M5	30	2.0	1.9	2.3	2.1	2.6	2.4	2.8	2.6	3.3	3.1
		40	2.7	2.0	3.1	2.2	3.5	2.5	3.8	2.7	4.4	3.2
		55	3.7	2.0	4.2	2.3	4.7	2.5	5.2	2.8	6.0	3.2
		65	5.1	2.1	5.8	2.3	6.5	2.6	7.1	2.9	8.2	3.3
8	M6	25	1.6	2.8	1.8	3.1	2.0	3.5	2.2	3.9	2.5	4.5
		35	2.6	3.0	2.9	3.4	3.3	3.8	3.6	4.2	4.2	4.8
		50	3.5	3.0	4.0	3.4	4.5	3.9	5.0	4.2	5.7	4.9
10	M8	55	7.1	4.8	8.1	5.5	9.2	6.2	10.0	6.8	11.6	7.8
		60	10.1	4.8	11.5	5.5	13.0	6.2	14.2	6.8	16.4	7.9
		75	14.7	5.3	16.8	6.0	19.0	6.8	20.8	7.5	24.0	8.6

All above Values are Design Values for anchors installed in concrete with anchors installed at characteristic embedment depths, as shown.
Recommended Loads have been derived with a Safety factor of 4.
All Shear Values are Single Shear.

DESIGN DATA - REDUCTION FACTORS COUNTERSUNK HEAD - ZINC PLATED

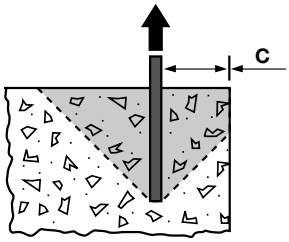


TABLE 6 - ØcN - EDGE REDUCTION FACTORS - TENSION ONLY

Anchor Size d, (mm)	EDGE DISTANCE IN CONCRETE (mm) 30 (mm)	35 (mm)	40 (mm)	50 (mm)	60 (mm)	80 (mm)	90 (mm)	100 (mm)	120 (mm)	140 (mm)
6.5	0.75	0.80	0.84	0.87	0.90	1.00				
8			0.80	0.85	0.88	0.94	0.95	1.00		
10				0.80	0.83	0.89	0.91	0.94	1.00	

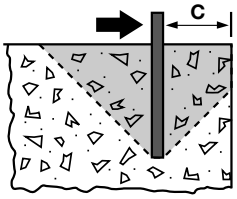


TABLE 7 - ØcV - EDGE REDUCTION FACTORS - SHEAR ONLY

Anchor Size d, (mm)	EDGE DISTANCE IN CONCRETE (mm) 30 (mm)	35 (mm)	40 (mm)	50 (mm)	60 (mm)	80 (mm)	90 (mm)	100 (mm)	120 (mm)	140 (mm)
6.5	0.50	0.53	0.58	0.69	0.80	0.91	1.00			
8			0.50	0.55	0.68	0.76	0.86	1.00		
10				0.50	0.57	0.64	0.71	0.86	1.00	

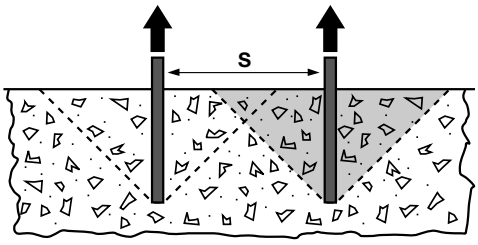
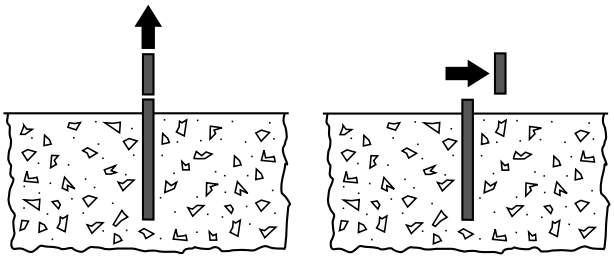


TABLE 8 - ØsN, ØsV - ANCHOR SPACING REDUCTION FACTORS - TENSION AND SHEAR

Anchor Size d, (mm)	ANCHOR SPACING, S (MM) - DISTANCE BETWEEN ANCHORS - CENTRE TO CENTRE 30 (mm)	35 (mm)	40 (mm)	45 (mm)	50 (mm)	60 (mm)	65 (mm)	80 (mm)	100 (mm)	120 (mm)
6.5	0.50	0.55	0.60	0.70	0.80	0.90	1.00			
8			0.50	0.55	0.60	0.75	0.80	1.00		
10					0.50	0.60	0.65	0.80	1.00	

SLEEVE ANCHORS



STEEL CAPACITIES COUNTERSUNK HEAD - ZINC PLATED

TABLE 10A

DIMENSIONS				CHARACTERISTIC VALUES Characteristic Resistance			DESIGN VALUES Working Stress Design		Limit State Design AS3600		Recommended Loads	
Hole/Drill Diameter D (mm)	Thread Size A_c (mm^2)	Core Area A_s (mm^2)	Stress Area	Tensile $NR_{uk,s}$ KN	Yield $NR_{yk,s}$ KN	Shear $V_{Rk,s}$ KN	Tensile WL_N KN	Shear WL_V KN	Tensile $N_{RD\,u,s}$ KN	Shear $V_{RD,s}$ KN	Tensile $N_{RD\,u,s}$ KN	Shear $V_{RD,s}$ KN
6.5	M5	13.42	14.20	5.68	3.41	3.33	1.89	1.11	2.84	1.66	1.42	0.83
8	M6	18.99	20.10	8.04	4.82	4.71	2.68	1.57	4.02	2.35	2.01	1.18
10	M8	34.70	36.60	14.64	8.78	8.61	4.88	2.87	7.32	4.30	3.66	2.15

All above Values are Mechanical properties, steel and are only applicable to products supplied by Bremick Pty Ltd.
Characterisic Values are Ultimate Values derived in accordance with Australian Standard 4291.1-2000 / ISO 898.1 - 1999.
All Shear Values are Single Shear.

HEXAGONAL FLUSH HEAD ZINC PLATED AND 316 STAINLESS STEEL

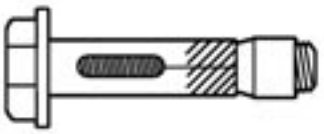
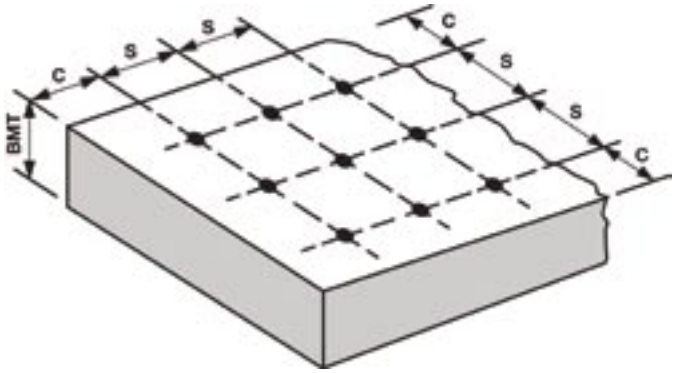


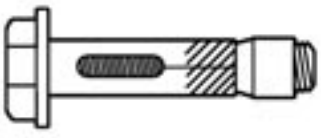
TABLE 1 - INSTALLATION DETAILS

FASTENER DETAILS			INSTALLATION DETAILS									
Anchor/ Drill Diameter	Thread Size	Anchor Length	Effective Embedment Depth	Characteristic Anchor Spacing (Tension & Shear)	Characteristic Edge Distance (Tension & Shear)	Minimum Anchor Spacing (Tension & Shear)	Minimum Edge Distance (Tension & Shear)	Minimum Base Material Thickness	Maximum Fixture Thickness	Clearance Hole Diameter (Fixture)	Installation Torque (Concrete)	Width Across Flats
D_o (mm)	D (mm)	L (mm)	h_t (mm)	S_{cr} (mm)	C_{cr} (mm)	S_{min} (mm)	C_{min} (mm)	h_{min} (mm)	t_{fix} (mm)	D_c (mm)	T_{inst} (Nm)	SW (mm)
10	M8	40	**35**	100	100	50	50	50	5	10	11	13
		45	**30**	100	100	50	50	40	15	10	11	13
		55	**35**	100	100	50	50	45	20	10	11	13
		60	**50**	100	100	50	50	65	10	10	11	13
		65	**50**	100	100	50	50	65	15	10	11	13
		80	**60**	100	100	50	50	75	20	10	11	13
		100	**70**	100	100	50	50	90	30	10	11	13
12	M10	65	**45**	120	120	60	60	60	20	12	22	16
		75	**50**	120	120	60	60	65	25	12	22	16
		80	**55**	120	120	60	60	70	25	12	22	16
		100	**60**	120	120	60	60	75	40	12	22	16



Notation, Spacing, Edge Distance & BMT

SLEEVE ANCHORS



HEXAGONAL FLUSH HEAD ZINC PLATED AND 316 STAINLESS STEEL

TABLE 2 - PERFORMANCE DATA - CONCRETE (CHARACTERISTIC RESISTANCE)

INSTALLATION DETAILS			CHARACTERISTIC RESISTANCE IN CONCRETE (Nrukc, Vrukc)									
			25MPa Concrete (fc)		32MPa Concrete (fc)		40MPa Concrete (fc)		50MPa Concrete (fc)		65MPa Concrete (fc)	
Hole/ Drill Diameter (mm)	Major Thread Diameter (mm)	Embedment Depth (mm)	Tension (NRukc) KN	Shear (Vrukc) KN	Tension (NRukc) KN	Shear (Vrukc) KN	Tension (NRukc) KN	Shear (Vrukc) KN	Tension (NRukc) KN	Shear (Vrukc) KN	Tension (NRukc) KN	Shear (Vrukc) KN
10	M8	30	8.6	17.5	9.8	20.0	11.1	22.6	12.1	24.7	14.0	28.5
		35	9.0	18.2	10.3	20.7	11.6	23.5	12.7	25.7	14.7	29.7
		40	14.7	18.7	16.8	21.3	19.0	24.1	20.7	26.4	24.0	30.5
		50	20.2	18.9	23.0	21.5	26.1	24.4	28.5	26.6	32.9	30.8
		55	28.5	19.2	32.5	21.9	36.8	24.8	40.2	27.1	46.5	31.3
		60	40.2	19.3	45.8	22.0	51.9	24.9	56.7	27.2	65.5	31.5
		70	43.8	20.2	49.9	23.0	56.5	26.1	61.8	28.5	71.4	32.9
		75	58.9	21.2	67.1	24.2	76.0	27.3	83.0	29.9	96.0	34.6
12	M10	40	12.6	23.7	14.4	27.0	16.3	30.6	17.8	33.4	20.5	38.6
		45	13.2	23.7	15.0	27.0	17.0	30.6	18.6	33.4	21.5	38.6
		50	20.1	23.8	22.9	27.1	25.9	30.7	28.3	33.6	32.8	38.8
		60	27.6	24.0	31.5	27.4	35.6	31.0	38.9	33.8	45.0	39.1
		80	40.3	25.2	45.9	28.7	52.0	32.5	56.8	35.5	65.7	41.1

All above Values are Characteristic Values in concrete with anchors installed at embedment depths, as shown.
Characterisic Resistances are derived from test data and are valid for products supplied by Bremick Pty Ltd only.
All testing was undertaken in unreinforced concrete with a minimum sample rate (n) of 10.
All Shear Values are Single Shear, where shear loads were applied normal to, and towards the edge of the concrete.

HEXAGONAL FLUSH HEAD ZINC PLATED AND 316 STAINLESS STEEL

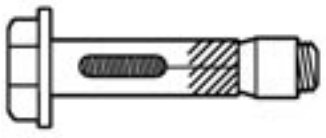
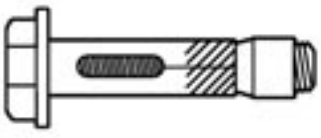


TABLE 3 - PERFORMANCE DATA - CONCRETE (WORKING STRESS DESIGN)

INSTALLATION DETAILS			WORKIING STRESS DESIGN - DESIGN CAPACITIES IN CONCRETE (WLN, WLV)									
Hole/ Drill Diameter	Major Thread Diameter	Embedment Depth	25MPa Concrete (fc)		32MPa Concrete (fc)		40MPa Concrete (fc)		50MPa Concrete (fc)		65MPa Concrete (fc)	
			Tension (WLN)	Shear (WLV)	Tension (WLN)	Shear (WLV)	Tension (WLN)	Shear (WLV)	Tension (WLN)	Shear (WLV)	Tension (WLN)	Shear (WLV)
(mm)	(mm)	(mm)	KN	KN	KN	KN	KN	KN	KN	KN	KN	KN
10	M8	30	2.9	5.8	3.3	6.7	3.7	7.5	4.0	8.2	4.7	9.5
		35	3.0	6.1	3.4	6.9	3.9	7.8	4.2	8.6	4.9	9.9
		40	4.9	6.2	5.6	7.1	6.3	8.0	6.9	8.8	8.0	10.2
		50	6.7	6.3	7.7	7.2	8.7	8.1	9.5	8.9	11.0	10.3
		55	9.5	6.4	10.8	7.3	12.3	8.3	13.4	9.0	15.5	10.4
		60	13.4	6.4	15.3	7.3	17.3	8.3	18.9	9.1	21.8	10.5
		70	14.6	6.7	16.6	7.7	18.8	8.7	20.6	9.5	23.8	11.0
		75	19.6	7.1	22.4	8.1	25.3	9.1	27.7	10.0	32.0	11.5
12	M10	40	4.2	7.9	4.8	9.0	5.4	10.2	5.9	11.1	6.8	12.9
		45	4.4	7.9	5.0	9.0	5.7	10.2	6.2	11.1	7.2	12.9
		50	6.7	7.9	7.6	9.0	8.6	10.2	9.4	11.2	10.9	12.9
		60	9.2	8.0	10.5	9.1	11.9	10.3	13.0	11.3	15.0	13.0
		80	13.4	8.4	15.3	9.6	17.3	10.8	18.9	11.8	21.9	13.7

All above Values are Design Values for anchors installed in concrete with anchors installed at characteristic embedment depths, as shown.
Working Stress Design Values have been derived with a safety factor of 3, and are valid for products supplied by Bremick Pty Ltd only.
All Shear Values are Single Shear.

SLEEVE ANCHORS



HEXAGONAL FLUSH HEAD ZINC PLATED AND 316 STAINLESS STEEL

TABLE 4 - PERFORMANCE DATA - CONCRETE (LIMIT STATE DESIGN)

INSTALLATION DETAILS			LIMIT STATE DESIGN - DESIGN CAPACITIES IN CONCRETE (NRD,c ,VRD ,c)									
			25MPa Concrete (fc)		32MPa Concrete (fc)		40MPa Concrete (fc)		50MPa Concrete (fc)		65MPa Concrete (fc)	
Hole/ Drill Diameter (mm)	Major Thread Diameter (mm)	Embedment Depth (mm)	Tension (NRD,c) KN	Shear (VRD,c) KN	Tension (NRD,c) KN	Shear (VRD,c) KN	Tension (NRD,c) KN	Shear (VRD,c) KN	Tension (NRD,c) KN	Shear (VRD,c) KN	Tension (NRD,c) KN	Shear (VRD,c) KN
10	M8	30	3.4	7.0	3.9	8.0	4.4	9.0	4.9	9.9	5.6	11.4
		35	3.6	7.3	4.1	8.3	4.6	9.4	5.1	10.3	5.9	11.9
		40	5.9	7.5	6.7	8.5	7.6	9.6	8.3	10.5	9.6	12.2
		50	8.1	7.6	9.2	8.6	10.4	9.8	11.4	10.7	13.2	12.3
		55	11.4	7.7	13.0	8.8	14.7	9.9	16.1	10.8	18.6	12.5
		60	16.1	7.7	18.3	8.8	20.7	10.0	22.7	10.9	26.2	12.6
		70	17.5	8.1	20.0	9.2	22.6	10.4	24.7	11.4	28.6	13.2
		75	23.6	8.5	26.9	9.7	30.4	10.9	33.2	12.0	38.4	13.8
12	M10	40	5.0	9.5	5.7	10.8	6.5	12.2	7.1	13.4	8.2	15.5
		45	5.3	9.5	6.0	10.8	6.8	12.2	7.4	13.4	8.6	15.5
		50	8.0	9.5	9.2	10.9	10.4	12.3	11.3	13.4	13.1	15.5
		60	11.0	9.6	12.6	10.9	14.2	12.4	15.6	13.5	18.0	15.6
		80	16.1	10.1	18.4	11.5	20.8	13.0	22.7	14.2	26.3	16.4

All above Values are Design Values in concrete with anchors installed at characteristic embedment depths, as shown, and are valid for products supplied by Bremick Pty Ltd only
Limit State Design Values have been derived in accordance with AS 3600-2001 with an expected coefficient of varience of 20%.
All Shear Values are Single Shear.

HEXAGONAL FLUSH HEAD ZINC PLATED AND 316 STAINLESS STEEL

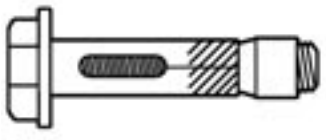


TABLE 5 - PERFORMANCE DATA - CONCRETE (RECOMMENDED LOADS)

INSTALLATION DETAILS			RECOMMENDED LOADS IN CONCRETE (Nrec,c/ Vrec,c)									
Hole/ Drill Diameter	Major Thread Diameter	Embedment Depth	25MPa Concrete (fc)		32MPa Concrete (fc)		40MPa Concrete (fc)		50MPa Concrete (fc)		65MPa Concrete (fc)	
			Tension (Nrec,c)	Shear (Vrec,c)	Tension (Nrec,c)	Shear (Vrec,c)	Tension (Nrec,c)	Shear (Vrec,c)	Tension (Nrec,c)	Shear (Vrec,c)	Tension (Nrec,c)	Shear (Vrec,c)
(mm)	(mm)	(mm)	KN	KN	KN	KN	KN	KN	KN	KN	KN	KN
10	M8	30	2.2	4.4	2.5	5.0	2.8	5.6	3.0	6.2	3.5	7.1
		35	2.3	4.6	2.6	5.2	2.9	5.9	3.2	6.4	3.7	7.4
		40	3.7	4.7	4.2	5.3	4.7	6.0	5.2	6.6	6.0	7.6
		50	5.1	4.7	5.8	5.4	6.5	6.1	7.1	6.7	8.2	7.7
		55	7.1	4.8	8.1	5.5	9.2	6.2	10.0	6.8	11.6	7.8
		60	10.1	4.8	11.5	5.5	13.0	6.2	14.2	6.8	16.4	7.9
		70	11.0	5.1	12.5	5.8	14.1	6.5	15.4	7.1	17.8	8.2
		75	14.7	5.3	16.8	6.0	19.0	6.8	20.8	7.5	24.0	8.6
12	M10	40	3.2	5.9	3.6	6.8	4.1	7.6	4.4	8.4	5.1	9.7
		45	3.3	5.9	3.8	6.8	4.3	7.6	4.7	8.4	5.4	9.7
		50	5.0	6.0	5.7	6.8	6.5	7.7	7.1	8.4	8.2	9.7
		60	6.9	6.0	7.9	6.8	8.9	7.7	9.7	8.5	11.2	9.8
		80	10.1	6.3	11.5	7.2	13.0	8.1	14.2	8.9	16.4	10.3

All above Values are Design Values for anchors installed in concrete with anchors installed at characteristic embedment depths, as shown.
Recommended Loads have been derived with a Safety factor of 4.
All Shear Values are Single Shear.

DESIGN DATA - REDUCTION FACTORS FLUSH HEAD - ZINC PLATED AND 316 STAINLESS STEEL

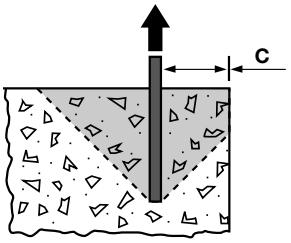
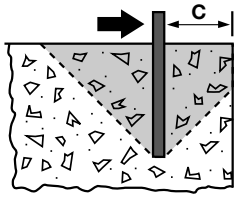


TABLE 6 - ØcN - EDGE REDUCTION FACTORS - TENSION ONLY

Anchor Size d, (mm)	EDGE DISTANCE IN CONCRETE (mm)									
	30 (mm)	35 (mm)	40 (mm)	50 (mm)	60 (mm)	80 (mm)	90 (mm)	100 (mm)	120 (mm)	140 (mm)
10				0.80	0.83	0.89	0.91	0.94	1.00	
12					0.80	0.84	0.85	0.88	0.94	1.00

SLEEVE ANCHORS



DESIGN DATA - REDUCTION FACTORS FLUSH HEAD - ZINC PLATED AND 316 STAINLESS STEEL

TABLE 7 - ØcV - EDGE REDUCTION FACTORS - SHEAR ONLY

Anchor Size d, (mm)	EDGE DISTANCE IN CONCRETE (mm) 30 (mm)	35 (mm)	40 (mm)	50 (mm)	60 (mm)	70 (mm)	80 (mm)	100 (mm)	120 (mm)	140 (mm)
10				0.50	0.57	0.64	0.71	0.86	1.00	
12					0.50	0.55	0.62	0.74	0.86	1.00

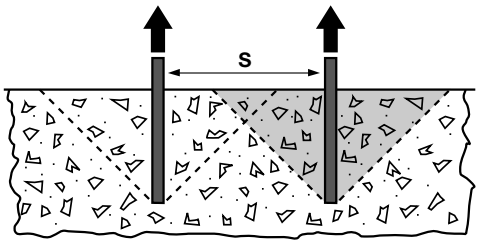


TABLE 8 - ØsN, ØsV - ANCHOR SPACING REDUCTION FACTORS - TENSION AND SHEAR

Anchor Size d, (mm)	ANCHOR SPACING, S (MM) - DISTANCE BETWEEN ANCHORS - CENTRE TO CENTRE 30 (mm)	35 (mm)	45 (mm)	50 (mm)	60 (mm)	65 (mm)	80 (mm)	100 (mm)	120 (mm)
10				0.50	0.60	0.65	0.80	1.00	
12					0.50	0.55	0.70	0.90	1.00

STEEL CAPACITIES
FLUSH HEAD - ZINC PLATED

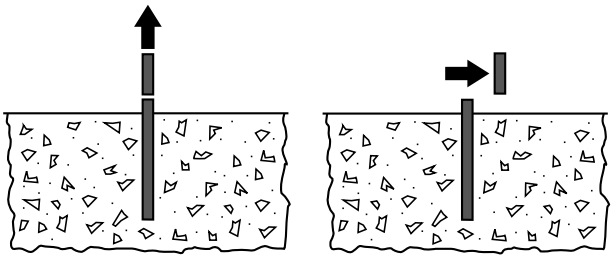


TABLE 10A

DIMENSIONS				CHARACTERISTIC VALUES Characteristic Resistance			DESIGN VALUES Working Stress Design		Limit State Design AS3600		Recommended Loads	
Hole/Drill Diameter D (mm)	Thread Size A_c (mm^2)	Core Area A_s (mm^2)	Stress Area	Tensile $NR_{uk,s}$ KN	Yield $NR_{yk,s}$ KN	Shear $V_{Rk,s}$ KN	Tensile WL_N KN	Shear WL_V KN	Tensile $N_{RD\ u,s}$ KN	Shear $V_{RD\ ,s}$ KN	Tensile $N_{RD\ u,s}$ KN	Shear $V_{RD\ ,s}$ KN
10	M8	34.70	36.60	14.64	8.78	8.61	4.88	2.87	7.32	4.30	3.66	2.15
12	M10	55.10	58.00	23.20	13.92	13.67	7.73	4.56	11.60	6.83	5.80	3.42

All above Values are Mechanical properties, steel and are only applicable to products supplied by Bremick Pty Ltd.
Characterisic Values are Ultimate Values derived in accordance with Australian Standard 4291.1-2000 / ISO 898.1 - 1999.
All Shear Values are Single Shear.

STEEL CAPACITIES
FLUSH HEAD - 316 STAINLESS

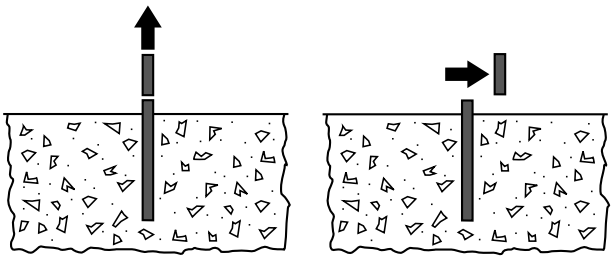


TABLE 10B

DIMENSIONS				CHARACTERISTIC VALUES Characteristic Resistance			DESIGN VALUES Working Stress Design		Limit State Design AS3600		Recommended Loads	
Hole/Drill Diameter D (mm)	Thread Size A_c (mm^2)	Core Area A_s (mm^2)	Stress Area	Tensile $NR_{uk,s}$ KN	Yield $NR_{yk,s}$ KN	Shear $V_{Rk,s}$ KN	Tensile WL_N KN	Shear WL_V KN	Tensile $N_{RD\ u,s}$ KN	Shear $V_{RD\ ,s}$ KN	Tensile $N_{RD\ u,s}$ KN	Shear $V_{RD\ ,s}$ KN
10	M8	34.70	36.60	25.62	16.47	15.06	8.54	5.02	12.81	7.53	6.41	3.77
12	M10	55.10	58.00	40.60	26.10	23.91	13.53	7.97	20.30	11.96	10.15	5.98

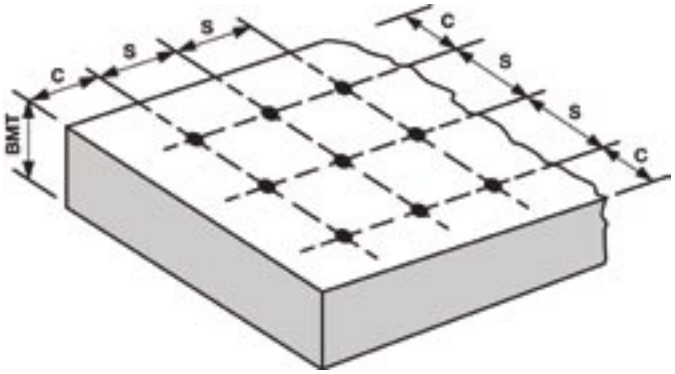
All above Values are Mechanical properties, steel and are only applicable to products supplied by Bremick Pty Ltd.
Characterisic Values are Ultimate Values derived in accordance with Australian Standard 4291.1-2000 / ISO 898.1 - 1999.
All Shear Values are Single Shear.

SLEEVE ANCHORS

EYE BOLT & HOOK BOLT ZINC PLATED

TABLE 1 - INSTALLATION DETAILS

FASTENER DETAILS			INSTALLATION DETAILS									
Anchor/ Drill Diameter	Thread Size	Anchor Length	Effective Embedment Depth	Characteristic Anchor Spacing (Tension & Shear)	Characteristic Edge Distance (Tension & Shear)	Minimum Anchor Spacing (Tension & Shear)	Minimum Edge Distance (Tension & Shear)	Minimum Base Material Thickness	Maximum Fixture Thickness	Clearance Hole Diameter (Fixture)	Installation Torque (Concrete)	Width Across Flats
D_o (mm)	D (mm)	L (mm)	h_t (mm)	S_{cr} (mm)	C_{cr} (mm)	S_{min} (mm)	C_{min} (mm)	h_{min} (mm)	t_{fix} (mm)	D_c (mm)	T_{inst} (Nm)	SW (mm)
8	M6	45	**45**	80	100	40	40	60	N/A	8	10	10



Notation, Spacing, Edge Distance & BMT

TABLE 2 - PERFORMANCE DATA - CONCRETE (CHARACTERISTIC RESISTANCE)

INSTALLATION DETAILS			CHARACTERISTIC RESISTANCE IN CONCRETE (Nrukc, Vrukc)									
Hole/ Drill Diameter	Major Thread Diameter	Embedment Depth	25MPa Concrete (fc)		32MPa Concrete (fc)		40MPa Concrete (fc)		50MPa Concrete (fc)		65MPa Concrete (fc)	
			Tension (NRukc) KN	Shear (Vrukc) KN	Tension (NRukc) KN	Shear (Vrukc) KN	Tension (NRukc) KN	Shear (Vrukc) KN	Tension (NRukc) KN	Shear (Vrukc) KN	Tension (NRukc) KN	Shear (Vrukc) KN
(mm)	(mm)	(mm)										
8	M6	30	0.5	0.9	0.6	1.0	0.6	1.1	0.7	1.2	0.8	1.4

All above Values are Characteristic Values in concrete with anchors installed at embedment depths, as shown.
Characterisic Resistances are derived from test data and are valid for products supplied by Bremick Pty Ltd only.
All testing was undertaken in unreinforced concrete with a minimum sample rate (n) of 10.
All Shear Values are Single Shear, where shear loads were applied normal to, and towards the edge of the concrete.

TABLE 3 - PERFORMANCE DATA - CONCRETE (WORKING STRESS DESIGN)

INSTALLATION DETAILS			WORKIING STRESS DESIGN - DESIGN CAPACITIES IN CONCRETE (WLN, WLV)									
Hole/ Drill Diameter	Major Thread Diameter	Embedment Depth	25MPa Concrete (fc)		32MPa Concrete (fc)		40MPa Concrete (fc)		50MPa Concrete (fc)		65MPa Concrete (fc)	
			Tension (WLN) KN	Shear (WLV) KN	Tension (WLN) KN	Shear (WLV) KN	Tension (WLN) KN	Shear (WLV) KN	Tension (WLN) KN	Shear (WLV) KN	Tension (WLN) KN	Shear (WLV) KN
(mm)	(mm)	(mm)										
8	M6	30	0.4	0.7	0.5	0.8	0.5	0.9	0.6	1.0	0.7	1.2

All above Values are Design Values for anchors installed in concrete with anchors installed at characteristic embedment depths, as shown.
Working Stress Design Values have been derived with a safety factor of 3, and are valid for products supplied by Bremick Pty Ltd only.
All Shear Values are Single Shear.

SLEEVE ANCHORS

EYE BOLT & HOOK BOLT ZINC PLATED

TABLE 4 - PERFORMANCE DATA - CONCRETE (LIMIT STATE DESIGN)

INSTALLATION DETAILS			LIMIT STATE DESIGN - DESIGN CAPACITIES IN CONCRETE (NRD,c ,VRD ,c)									
Hole/ Drill Diameter	Major Thread Diameter	Embedment Depth	25MPa Concrete (fc)		32MPa Concrete (fc)		40MPa Concrete (fc)		50MPa Concrete (fc)		65MPa Concrete (fc)	
			Tension (NRD,c) KN	Shear (VRD,c) KN	Tension (NRD,c) KN	Shear (VRD,c) KN	Tension (NRD,c) KN	Shear (VRD,c) KN	Tension (NRD,c) KN	Shear (VRD,c) KN	Tension (NRD,c) KN	Shear (VRD,c) KN
(mm)	(mm)	(mm)										
8	M6	30	0.5	0.9	0.6	1.0	0.6	1.1	0.7	1.2	0.8	1.4

All above Values are Design Values in concrete with anchors installed at characteristic embedment depths, as shown, and are valid for products supplied by Bremick Pty Ltd only
Limit State Design Values have been derived in accordance with AS 3600-2001 with an expected coefficient of varience of 20%.
All Shear Values are Single Shear.

TABLE 5 - PERFORMANCE DATA - CONCRETE (RECOMMENDED LOADS)

INSTALLATION DETAILS			RECOMMENDED LOADS IN CONCRETE (Nrec,c/ Vrec,c)									
Hole/ Drill Diameter	Major Thread Diameter	Embedment Depth	25MPa Concrete (fc)		32MPa Concrete (fc)		40MPa Concrete (fc)		50MPa Concrete (fc)		65MPa Concrete (fc)	
			Tension (Nrec,c) KN	Shear (Vrec,c) KN	Tension (Nrec,c) KN	Shear (Vrec,c) KN	Tension (Nrec,c) KN	Shear (Vrec,c) KN	Tension (Nrec,c) KN	Shear (Vrec,c) KN	Tension (Nrec,c) KN	Shear (Vrec,c) KN
(mm)	(mm)	(mm)										
8	M6	30	0.3	0.6	0.4	0.6	0.4	0.7	0.4	0.8	0.5	0.9

All above Values are Design Values for anchors installed in concrete with anchors installed at characteristic embedment depths, as shown.
Recommended Loads have been derived with a Safety factor of 4.
All Shear Values are Single Shear.

DESIGN DATA - REDUCTION FACTORS EYE BOLT & HOOK BOLT ZINC PLATED

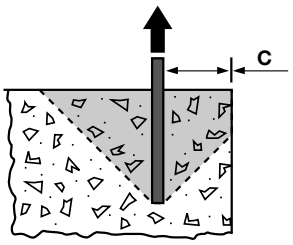
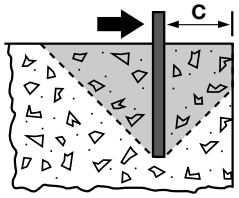


TABLE 6 - Ø$_{cN}$ - EDGE REDUCTION FACTORS - TENSION ONLY

Anchor Size d, (mm)	EDGE DISTANCE IN CONCRETE (mm)									
	30 (mm)	35 (mm)	40 (mm)	50 (mm)	60 (mm)	80 (mm)	90 (mm)	100 (mm)	120 (mm)	140 (mm)
8			0.80	0.85	0.88	0.94	0.95	1.00		

SLEEVE ANCHORS



EYE BOLT & HOOK BOLT ZINC PLATED

TABLE 7 - ØcV - EDGE REDUCTION FACTORS - SHEAR ONLY

Anchor Size d, (mm)	EDGE DISTANCE IN CONCRETE (mm) 30 (mm)	35 (mm)	40 (mm)	50 (mm)	60 (mm)	70 (mm)	80 (mm)	100 (mm)	120 (mm)	140 (mm)
8			0.50	0.55	0.68	0.76	0.86	1.00		

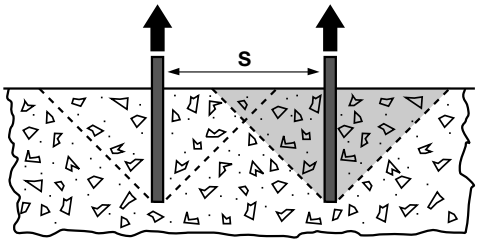
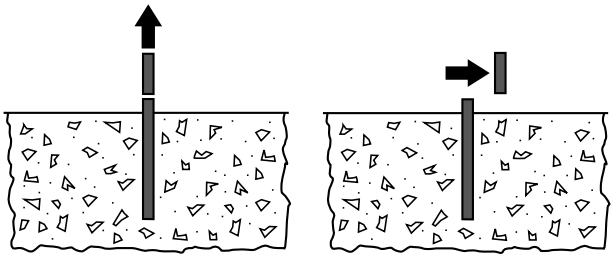


TABLE 8 - ØsN, ØsV - ANCHOR SPACING REDUCTION FACTORS - TENSION AND SHEAR

Anchor Size d, (mm)	ANCHOR SPACING, S (MM) - DISTANCE BETWEEN ANCHORS - CENTRE TO CENTRE 30 (mm)	35 (mm)	40 (mm)	45 (mm)	50 (mm)	60 (mm)	65 (mm)	80 (mm)	100 (mm)	120 (mm)
8			0.50	0.55	0.60	0.75	0.80	1.00		



STEEL CAPACITIES EYE BOLT, HOOK BOLT - ZINC PLATED

TABLE 10A

DIMENSIONS				CHARACTERISTIC VALUES Characteristic Resistance			DESIGN VALUES Working Stress Design		Limit State Design AS3600		Recommended Loads	
Hole/Drill Diameter D (mm)	Thread Size A_c (mm^2)	Core Area A_s (mm^2)	Stress Area	Tensile $N_{Ruk,s}$ KN	Yield $N_{Ryk,s}$ KN	Shear $V_{Rk,s}$ KN	Tensile W_{LN} KN	Shear W_{LV} KN	Tensile $N_{RD\,u,s}$ KN	Shear $V_{RD,s}$ KN	Tensile $N_{RD\,u,s}$ KN	Shear $V_{RD,s}$ KN
8	M6	18.99	20.10	8.04	4.82	4.71	2.68	1.57	4.02	2.35	2.01	1.18

All above Values are Mechanical properties, steel and are only applicable to products supplied by Bremick Pty Ltd.
Characterisic Values are Ultimate Values derived in accordance with Australian Standard 4291.1-2000 / ISO 898.1 - 1999.
All Shear Values are Single Shear.

SUMMARY OF TRADING TERMS

SUMMARY OF TRADING TERMS

FIS Delivery

Our company does not pass on the cost of normal freight to customers, providing orders are despatched by our nominated carriers.

Payment/Credits

Our trading terms are 30 days from statement date. Consignment stock is not available.

Returns for credit are subject to prior approval and allocation of an acceptance number, without which our warehouse is directed not to receive them. Receipt of goods in this way does not imply agreement to issue a credit note.

Approval of credit can only be considered if the request for credit in writing is received (within 14 days of receipt of goods) showing the credit acceptance number, original invoice number, date and reason for return.

No freight charges for return of goods shall be accepted unless authorised by Bremick.

Products which have been reworked, specially manufactured or zinc plated cannot be returned.

List Prices

All prices are Industrial List, current at the time of printing and adopted by leading suppliers and distributors. Relevant trade discounts apply. Tax is not included. All care but no responsibility is taken.

Fixed Term Pricing

Some end users request firm (eg, 12 month contract) pricing arrangements. We receive no guarantees in relation to our costs. Increases usually occur without advance notice, resulting from currency fluctuation and in reaction to raw material costs and worldwide demand. Hence we cannot make fixed longterm price undertakings to distributors and do not recommend they do so to end users. However, we can advise anticipated price trends resulting from recent changes in our own costs.

We are unable to commit to a fixed period of prior advice of upcoming price changes (detailed written explanation available on request) but have always worked closely with specialist merchant distributors.

Romalpa Clause

1. Notwithstanding anything in these Conditions of Sale contained, expressed or implied or incorporated herein by reference and notwithstanding any rule of law or equity to the contrary and notwithstanding any course of dealing between the Company and the Purchaser, property in goods shall not pass from the Company to the Purchaser unless and until –

   (a) Such goods have been delivered in accordance with these conditions and

   (b) The Purchaser shall have made payment in full for such goods ("the goods") and

   (c) The Purchaser shall have fully discharged all other indebtedness and other liability (if any) of the Purchaser to the Company on whatsoever account. The Purchaser shall, notwithstanding the foregoing, be empowered as the agent of the Company to sell the goods and shall hold the proceeds of such sale upon trust to apply the same, firstly in payment or otherwise discharging the price payable to the Company for such goods and any other costs of carriage or insurance or other costs or expenses borne by the Company in respect thereof; secondly, in paying or otherwise discharging all the other indebtedness or liability (if any) of the Purchaser to the Company on whatsoever account, which is outstanding at the date that the Purchaser receives such proceeds of sale; thirdly, as to any balance, for the Purchaser's own use and benefit. Pending the passing of title to the goods the Company may require the Purchaser to mark the goods as being the property of the Company.