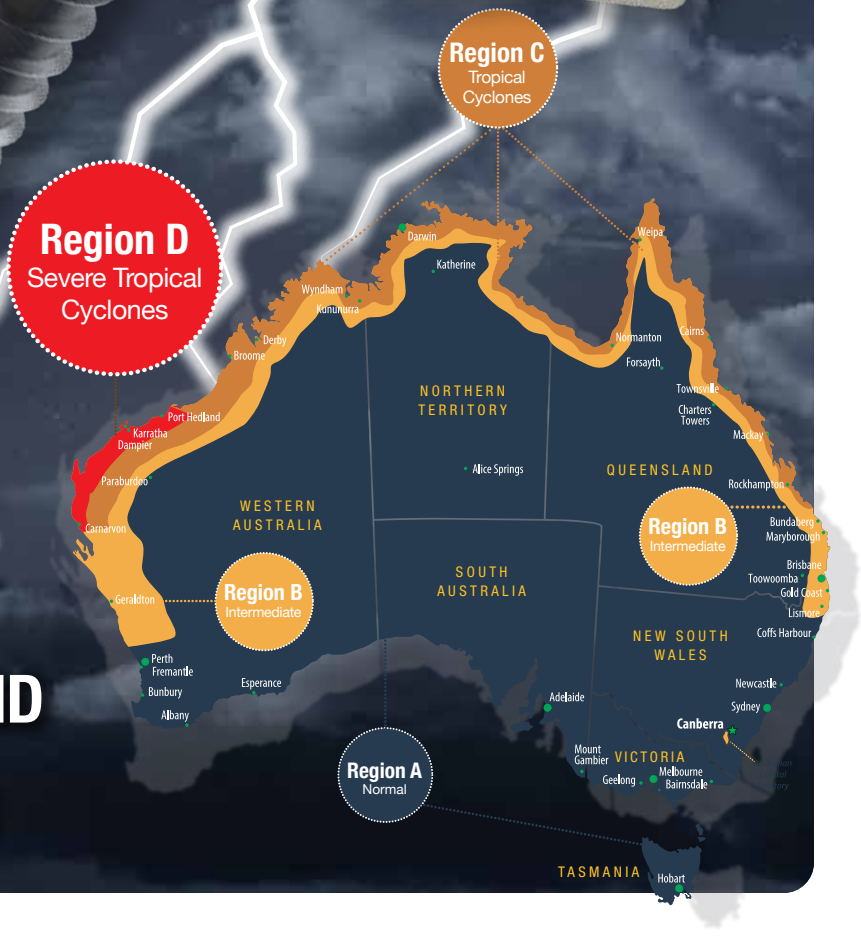
BREMICK®

REGION D™ CYCLONE ASSEMBLY®



DESIGNED AND ENGINEREED BY BREMICK TO WITHSTAND THE MOST SEVERE CYCLONIC CONDITIONS

The Bremick® Region D™ Cyclone Assembly®

For Fastening the crests of Corrugated and Square Rib Roof Cladding in Cyclonic regions

1. ® Proudly Design Registered by Bremick
2. Approved for the most severe Tropical Cyclones in Australia which are classified as "Region D"
3. Fully tested & compliant with Specification B1.2, NCC 2019 Volume One and Part 3.5.1.0 NCC 2019 Volume Two, AS 4070 & AS 1170 and Northern Territory “Deemed to Comply”

Universal Cyclonic Load Spreading Washer to suit Corrugated and Square Rib Profiles

Aluminium Zinc Coated to AS1397 to match the life of the cladding. Suitable for ISO 9223 Category 5 environments

High Tensile Plate material securely withstands severe cyclonic pressure

"Bremick Region D" marking for ease of certification & traceability

REVOLUTION™ B8 COATING

B8™ Coating provides extreme corrosion protection in Category 5 environments

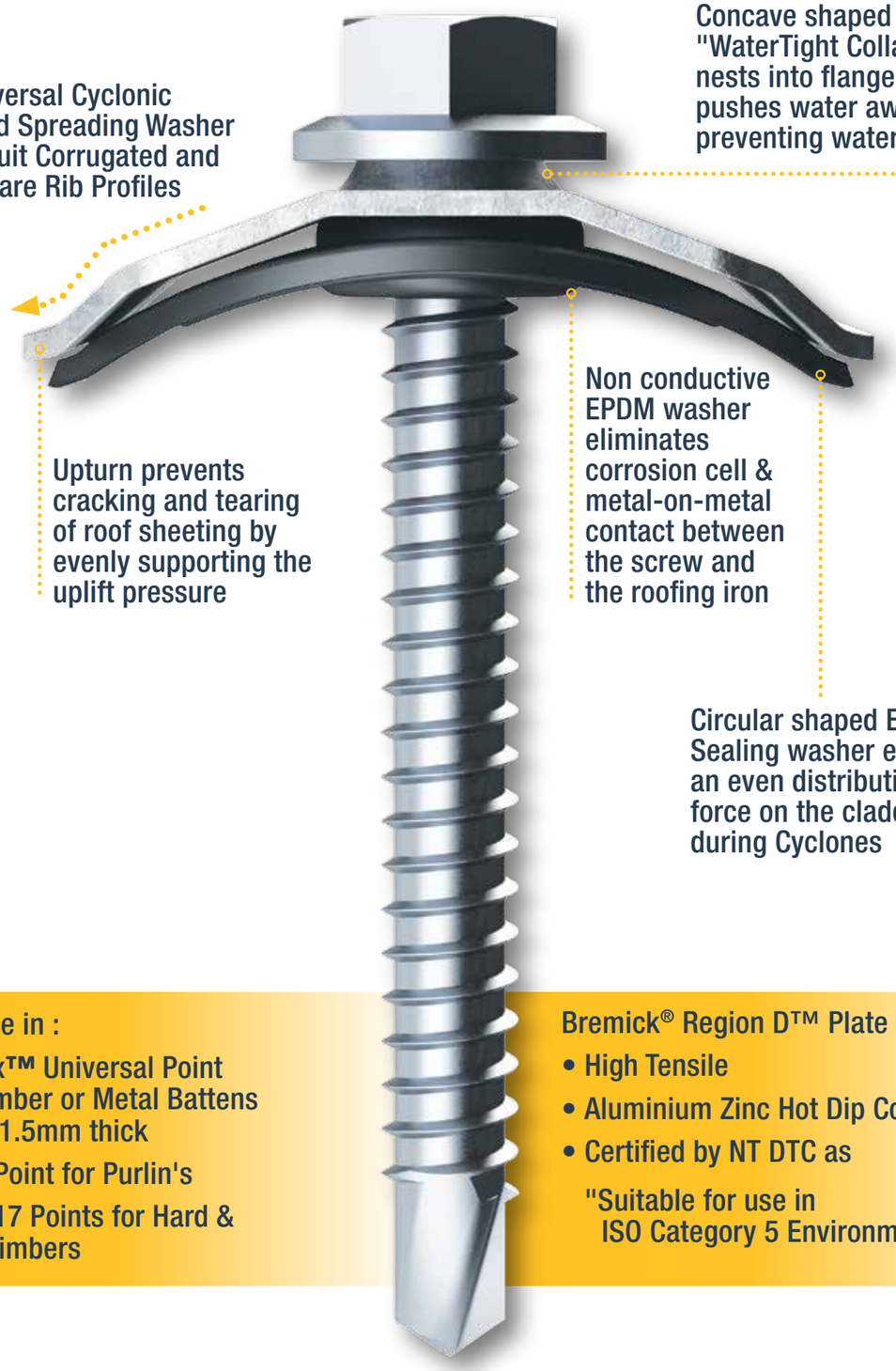
Concave shaped "WaterTight Collar" (WTC) nests into flange and pushes water away preventing water ingress

Universal Cyclonic Load Spreading Washer to suit Corrugated and Square Rib Profiles

Upturn prevents cracking and tearing of roof sheeting by evenly supporting the uplift pressure

Non conductive EPDM washer eliminates corrosion cell & metal-on-metal contact between the screw and the roofing iron

Circular shaped EPDM Sealing washer ensures an even distribution of force on the cladding during Cyclones



Available in :

- Vortex™ Universal Point for Timber or Metal Battens up to 1.5mm thick
- SDM Point for Purlin's
- Type 17 Points for Hard & Soft Timbers

Bremick® Region D™ Plate Material :

- High Tensile
- Aluminium Zinc Hot Dip Coated
- Certified by NT DTC as "Suitable for use in ISO Category 5 Environments"

Cyclones and Regions

Cyclones are gale forced winds of alternating pressures that are characterized by inward-spiraling winds that rotate around a strong center of low atmospheric pressure.

AS/NZS1170.2
“Structural design actions, Part 2: Wind actions" Identifies the Cyclonic Zones of Australia & New Zealand.
It states that Cyclonic Zones extend along the coast of Australia from Shark Bay in Western Australian, north all the way round to Bundaberg in Queensland “

"The most severe Cyclonic zone is Region D."

Cyclone Research

Investigations of Australian cyclones found five ways metal roofing & wall cladding failed:

1. Fatigue

Fatigue cracking of the cladding was initiated at the fastening point with the cladding eventually separating from the fastener

2. Tearing

Cladding tearing and separating from the cladding fastener

3. Failure

Batten failure at the truss support

4. Splitting

Batten splitting/cracking reducing holding capacity of cladding fastener

5. Fixings

Batten/truss fixings failing.

This research lead to the Building Code of Australia (BCA) requiring that the entire roofing system must be tested in accordance with Specification B1-2, NCC 2019 " Design of Building in Cyclonic Areas"

Reference: James Cook University, Cyclone Testing Station

Fatigue **cracking** can lead to a tearing in the Cladding causing the sheet to pull over the fixing.

Cyclone Research

How does a Cyclone cause metal cladding to fail?

When external pressures are negative, buildings may be subjected to increased pressure zones that up to three times higher than the general roof area.

The wall and roof cladding is subjected to severe and dynamic wind loads where extreme winds surge then retreat continually.

- The metal cladding system is first loaded by surges of wind
- The wind retreats and the cladding experiences “suction” forces
- This extreme cycle of wind loading followed by a period of low pressure fatigues the building components eventually causing failure

Cyclone Testing

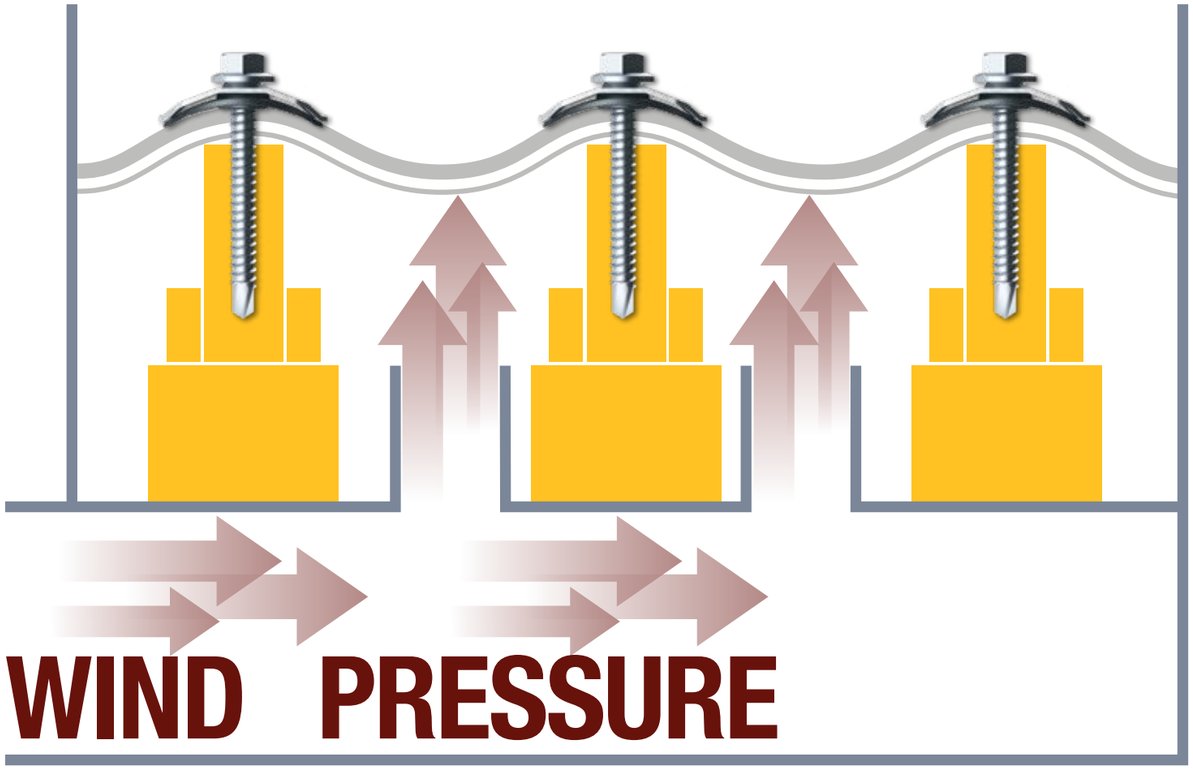
Bremick's Region D™ Cyclone Assemblies

Bremick's Region D™ Cyclone Assemblies have been tested in steel purlins, metal battens and timber batten supports. All tests have been undertaken at the NATA accredited Cyclone Testing Station (CTS) at James Cook University.

All tests were conducted on the CTS's "Direct Pressure Box" in accordance with the Low-High-Low Cyclonic test regime in the National Construction Codes BCA Vol.2 Part 3.5.1.0.

"Low-High-Low" Cyclonic Tests subject the roof system to over 1000 Cycles of extreme wind pressure surges and retreats to simulate a Category 5 Cyclone

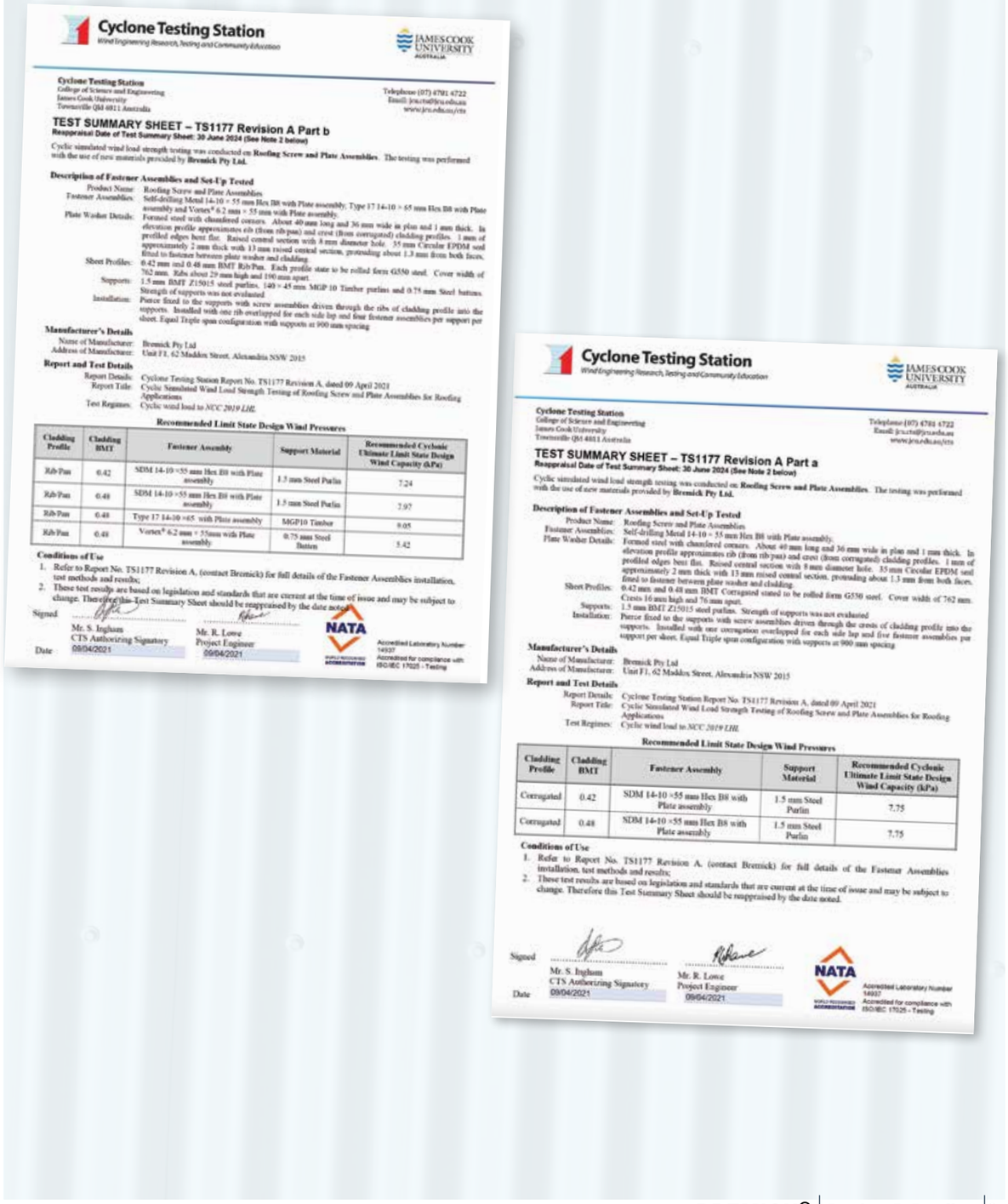
Bremick Region D™ Cyclone Assemblies enable this load extreme to be distributed over a larger surface area increasing the capacity of the interaction of the screw assembly with the roofing profile.



Cyclone Testing

Bremick's Region D™ Cyclone Assemblies

Bremick's Region D Cyclone Assemblies have been tested and approved in accordance with "NCC 2016 Low High Low Cyclic Wind Load" by James Cook University Cyclone Testing Station to the highest Cyclonic test pressures in Australia



Cyclone Testing Station
Wind Engineering Research, Testing and Community Education

JAMES COOK UNIVERSITY AUSTRALIA

Cyclone Testing Station
College of Science and Engineering
James Cook University
Townsville Qld 4811 Australia

Telephone (07) 4781 4722
Email: jcucts@jcu.edu.au
www.jcu.edu.au/cts

TEST SUMMARY SHEET – TS1177 Revision A Part b

Reappraisal Date of Test Summary Sheet: 30 June 2024 (See Note 2 below)

Cyclic simulated wind load strength testing was conducted on **Roofing Screw and Plate Assemblies**. The testing was performed with the use of new materials provided by **Bremick Pty Ltd.**

Description of Fastener Assemblies and Set-Up Tested

Product Name: Roofing Screw and Plate Assemblies
Fastener Assemblies: Self-drilling Metal 14-10 × 55 mm Hex B8 with Plate assembly; Type 17 14-10 × 65 mm Hex B8 with Plate assembly and Vortex® 6.2 mm × 55 mm with Plate assembly.
Plate Washer Details: Formed steel with chamfered corners. About 40 mm long and 36 mm wide in plan and 1 mm thick. In elevation profile approximates rib (from rib/pan) and crest (from corrugated) cladding profiles. 1 mm of profiled edges bent flat. Raised central section with 8 mm diameter hole. 35 mm Circular EPDM seal approximately 2 mm thick with 13 mm raised central section, protruding about 1.5 mm from both faces, fitted to fastener between plate washer and cladding.
Sheet Profiles: 0.42 mm and 0.48 mm BMT Rib/Pan. Each profile state to be rolled form G550 steel. Cover width of 762 mm. Ribs about 29 mm high and 190 mm apart.
Supports: 1.5 mm BMT Z15015 steel purlins, 140 × 45 mm MGP 10 Timber purlins and 0.75 mm Steel battens. Strength of supports was not evaluated.
Installation: Pierce fixed to the supports with screw assemblies driven through the ribs of cladding profile into the supports. Installed with one rib overlapped for each side lap and four fastener assemblies per support per sheet. Equal Triple span configuration with supports at 900 mm spacing.

Manufacturer's Details

Name of Manufacturer: Bremick Pty Ltd
Address of Manufacturer: Unit F1, 62 Maddox Street, Alexandria NSW 2015

Report and Test Details

Report Details: Cyclone Testing Station Report No. TS1177 Revision A, dated 09 April 2021
Report Title: Cyclic Simulated Wind Load Strength Testing of Roofing Screw and Plate Assemblies for Roofing Applications
Test Regimes: Cyclic wind load to *NCC 2019 LHL*

Recommended Limit State Design Wind Pressures

Cladding Profile	Cladding BMT	Fastener Assembly	Support Material	Recommended Cyclonic Ultimate Limit State Design Wind Capacity (kPa)
Rib/Pan	0.42	SDM 14-10 ×55 mm Hex B8 with Plate assembly	1.5 mm Steel Purlin	7.24
Rib/Pan	0.48	SDM 14-10 ×55 mm Hex B8 with Plate assembly	1.5 mm Steel Purlin	7.97
Rib/Pan	0.48	Type 17 14-10 ×65 with Plate assembly	MGP10 Timber	9.05
Rib/Pan	0.48	Vortex® 6.2 mm × 55mm with Plate assembly	0.75 mm Steel Batten	5.42

Conditions of Use

1. Refer to Report No. TS1177 Revision A, (contact Bremick) for full details of the Fastener Assemblies installation, test methods and results;
2. These test results are based on legislation and standards that are current at the time of issue and may be subject to change. Therefore this Test Summary Sheet should be reappraised by the date noted.

Signed
Mr. S. Ingham
CTS Authorizing Signatory
Date 09/04/2021

Mr. R. Lowe
Project Engineer
09/04/2021

NATA
Accredited Laboratory Number 14937
Accredited for compliance with ISO/IEC 17025 - Testing

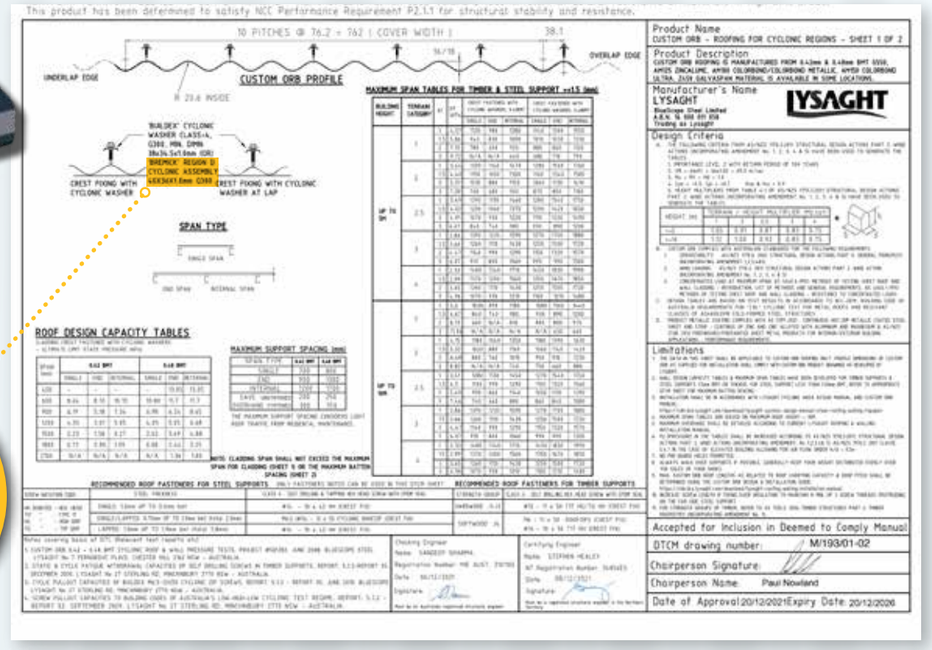
Cyclone Testing

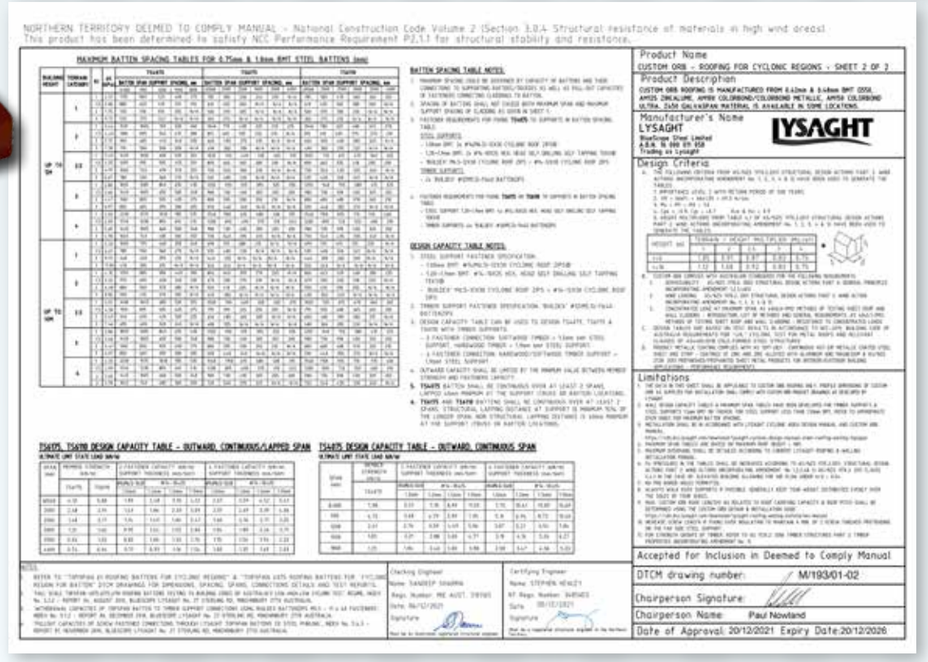
Bremick's Region D™ Cyclone Assemblies

Bremick's Region D Cyclone Assemblies are accepted for inclusion in Lysaght's Northern Territory "Deemed to Comply" Manual for Custom Orb® 0.42mm & 0.48mm Roof Cladding Profiles

Fastening Custom Orb® 0.42mm and 0.48mm BMT
Roof Cladding to Metal Battens, Purlins, Soft Wood and Hard Wood

'BREMICK' REGION D CYCLONIC ASSEMBLY 40X36X1.0mm G300





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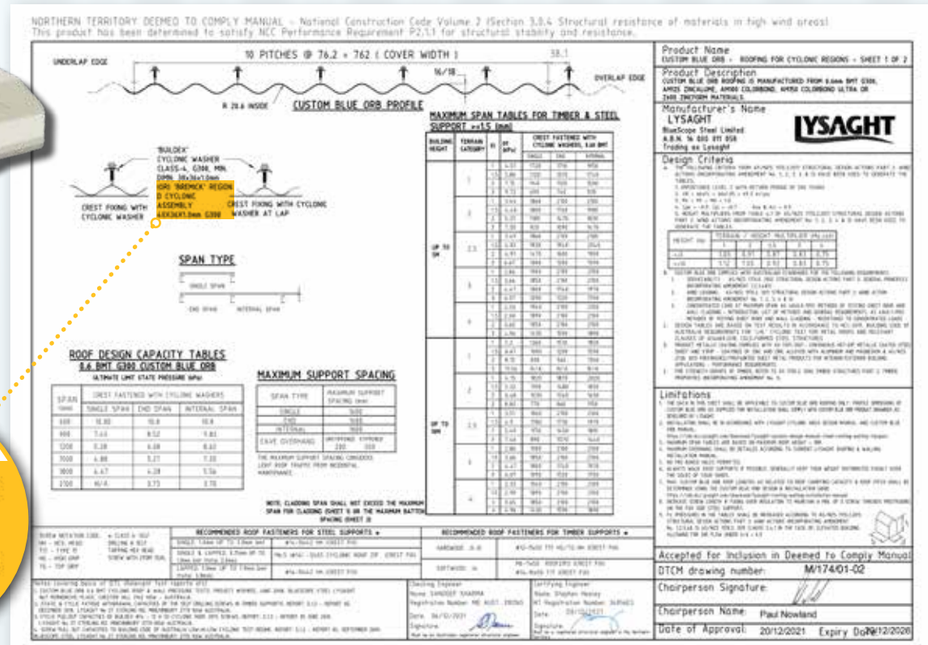
Cyclone Testing

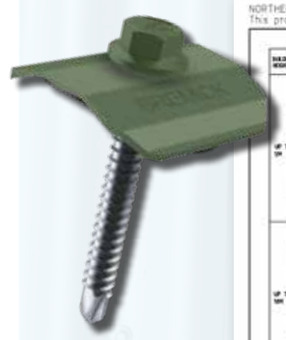
Bremick's Region D™ Cyclone Assemblies

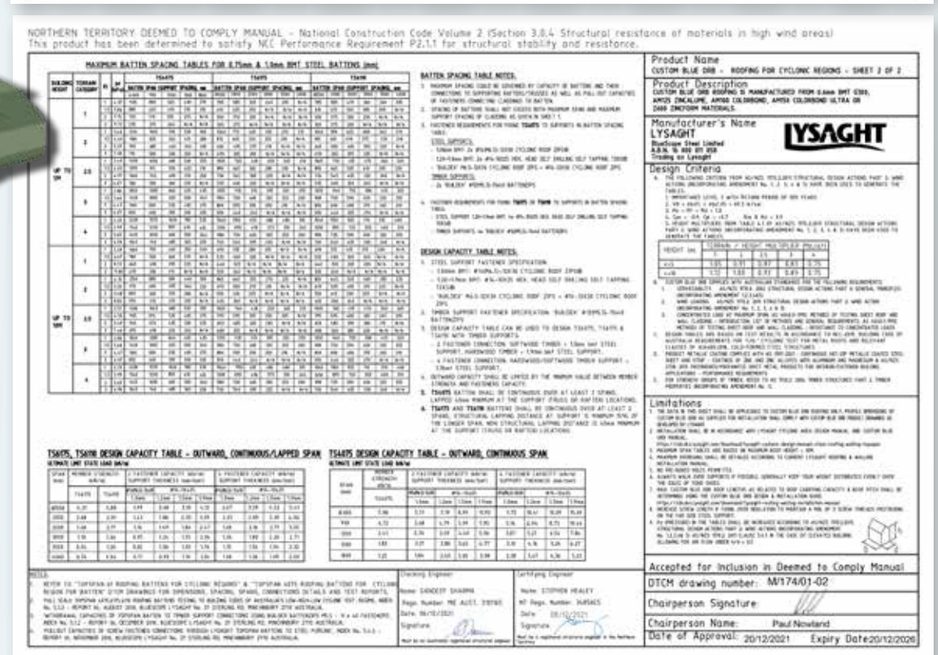
Bremick's Region D Cyclone Assemblies are accepted for inclusion in Lysaght's Northern Territory "Deemed to Comply" Manual for Custom Blue Orb® 0.6mm Roof Cladding Profiles

Fastening Custom Blue Orb® 0.6mm BMT
Roof Cladding to Metal Battens, Purlins, Soft Wood and Hard Wood

'BREMICK' REGION D CYCLONIC ASSEMBLY 40X36X1.0mm G300







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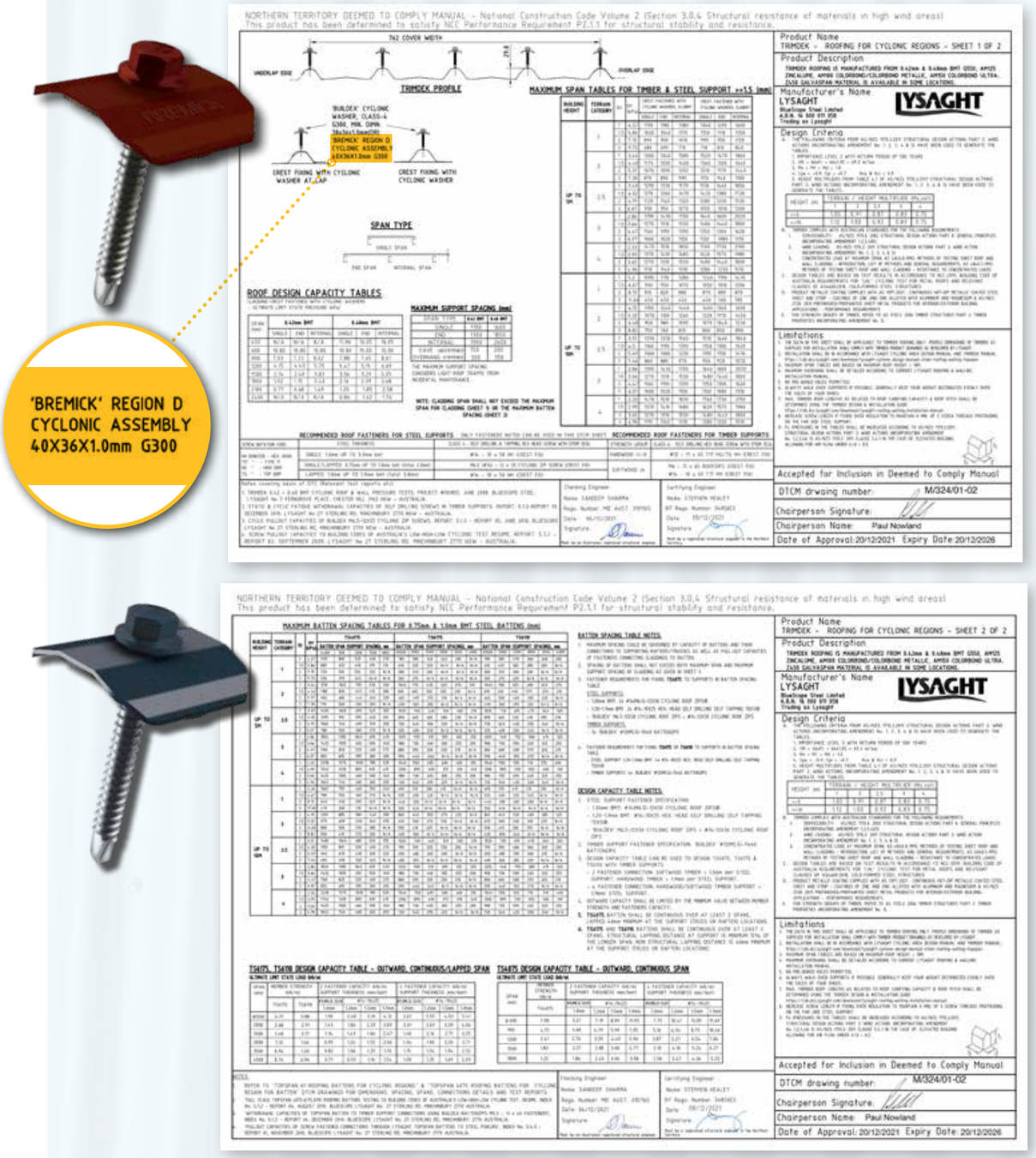
Cyclone Testing

Bremick's Region D™ Cyclone Assemblies

Bremick's Region D Cyclone Assemblies are accepted for inclusion in Lysaght's Northern Territory "Deemed to Comply" Manual for Trimdek® Roof Cladding Profiles

Fastening Trimdek® 0.42 & 0.48mm BMT
Roof Cladding to Steel Purlins, Softwood & Hardwood



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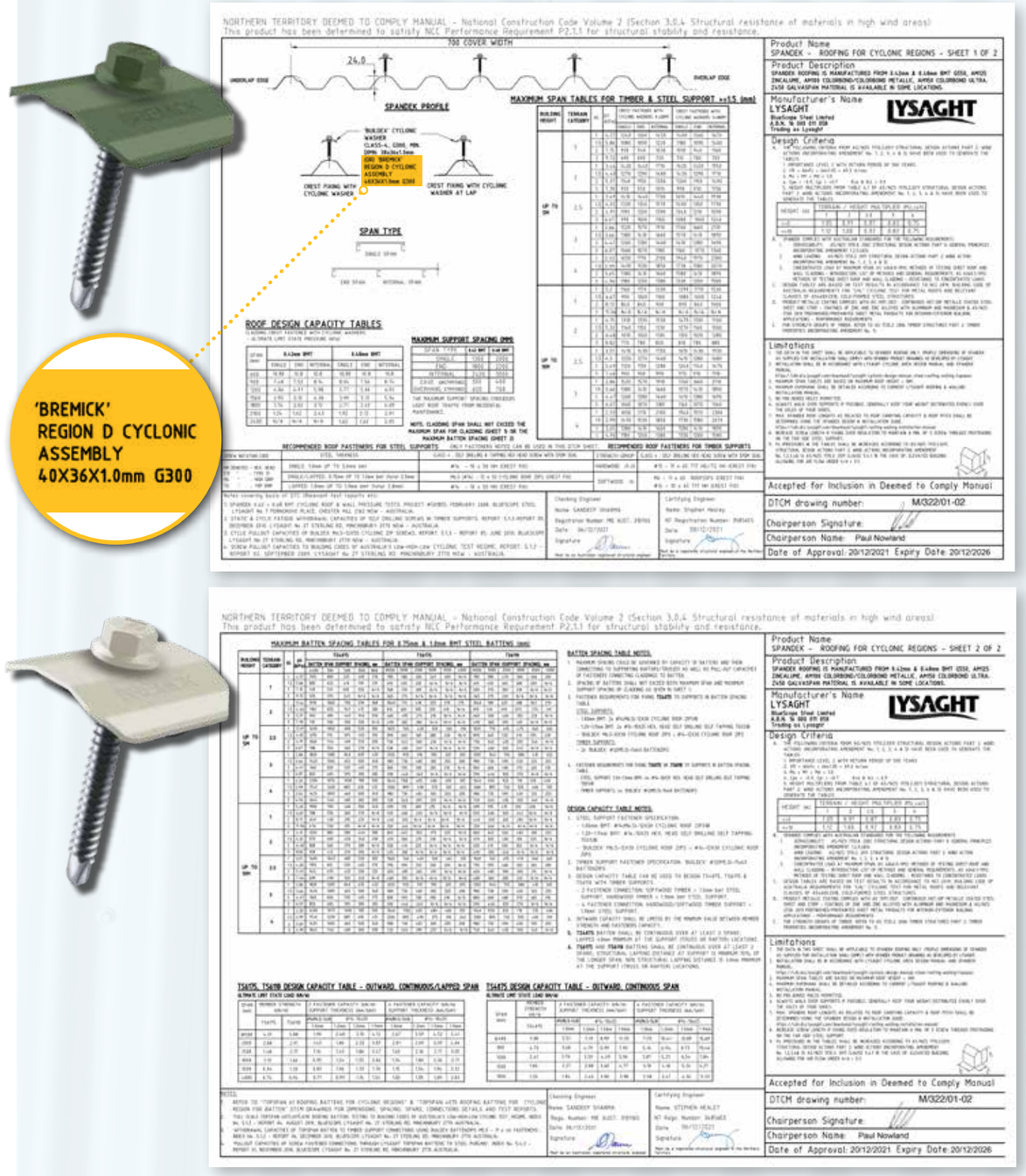
Cyclone Testing

Bremick's Region D™ Cyclone Assemblies

Bremick's Region D Cyclone Assemblies accepted for inclusion in Lysaght's Northern Territory "Deemed to Comply" Manual for Spandek® Roof Cladding Profiles

Fastening Spandek® 0.42 & 0.48mm BMT
Roof Cladding to Steel Purlins, Softwood & Hardwood



® Trimdek® & Spandek® are Registered Trademarks of Blue Scope Steel Ltd.

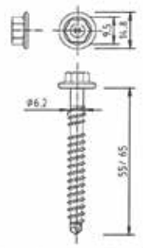
Cyclone Testing

Bremick's Region D™ Cyclone Assemblies

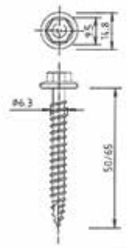
Bremick's Region D Cyclone Assemblies have been accepted for inclusion in the Northern Territory Deemed to Comply Manual for 0.42mm & 0.48mm Corrugated and Rib/Pan profiles for fastening to Metal Battens, Steel Purlins and Timber

NORTHERN TERRITORY DEEMED TO COMPLY MANUAL - National Construction Code Volume 2 (Section 3.0.4 Structural resistance of materials in high wind areas)
This product has been determined to satisfy NCC Performance Requirement P2.1.1 for structural stability and resistance.

VORTEX UNIVERSAL SCREW FOR METAL & TIMBER + REGION D CYCLONE ASSEMBLY
FOR METAL BATTENS, TIMBER BATTENS & STEEL PURLINS
M6.3-13 x 55 & 65mm
(HEAD MARKING B8 & B8V)
All dimensions in mm (nominal)



TYPE 17 SCREW FOR TIMBER + REGION D CYCLONE ASSEMBLY
FOR METAL BATTENS & TIMBER BATTENS
14g -10x50/65mm
(HEAD MARKING B8 & B8V)
All dimensions in mm (nominal)



SELF DRILLING SCREW FOR METAL + REGION D CYCLONE ASSEMBLY
FOR SELF DRILLING INTO STEEL PURLINS
14-10x50/65mm
(HEAD MARKING B8 & B8V)
All dimensions in mm (nominal)

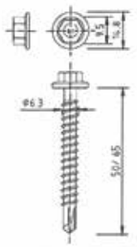


Plate Material:
(Suitable for Use in ISO 9223 Category 5 Environments)

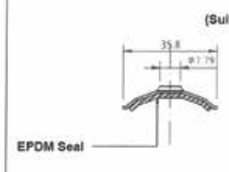


Table 1: Region D Cyclone Plate Design Capacity

Fastener	Sheet Type	Sheet Gauge (mm)	Support	Screw Pitch (mm)	Maximum Cladding Span (mm)	Design Capacity Pressure (kPa)	Design Capacity Pull Out (kN)
SDM 14-10 x 55 Hex	Rib/pan	0.42	1.5mm steel purlin	190	900	7.24	1.36
		0.48				7.97	1.50
Type 17 14-10 x 65		0.42	MGP 10			7.24	1.36
		0.48				7.97	1.50
Vortex 6.2mm x 65		0.42/0.48	0.75mm steel batten			5.42	1.02
SDM 14-10 x 55 Hex	Corrugated	0.42	1.5mm steel purlin	152		7.75	1.46
		0.48				7.75	1.46
Type 17 14-10 x 50		0.42	MGP 10			7.75	1.46
		0.48				7.75	1.46
Vortex 6.2mm x 55		0.42/0.48	0.75mm steel batten			5.42	0.82

Product Name
REGION D CYCLONE PLATE
(Also Suitable in Region C)

Product Description: Roofing Fasteners
Region D Cyclone Plate for Corrugated and Square Roofing Profiles

Manufacturer's Name: BREMICK Pty Ltd
88 Dalmeny Avenue
Rosebery NSW 2018
Ph: 02 8332 1520
Email: sales@bremick.com.au

Design Criteria
Fastener & support spacing to be controlled such that the maximum design loading per fastener does not exceed that detailed in Table 1.

Limitations
These sheets confirm the structural adequacy of the roof sheeting assembly (sheeting, screw and washer) when correctly installed and does not extend to the capacity of the batten/purlin. Refer to the sheeting & batten manufacturers data for maximum support spacings.

Strength limit state fastener loads have been derived from the test pressures using simplified static analysis with the uniform pressure (load) distribution.

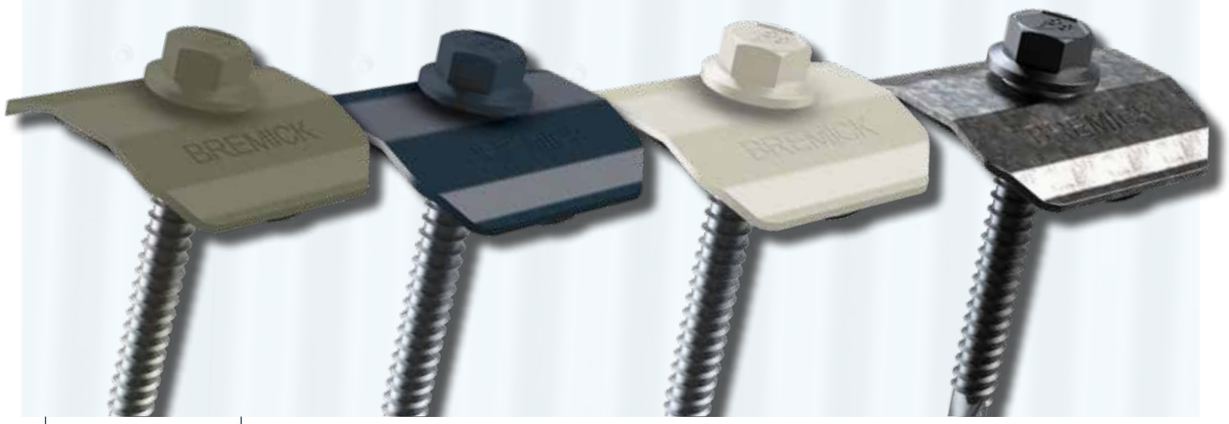
Accepted for Inclusion

DTCM ref: **M/185/01**

Chairman's Signature:

Chairman's Name: Paul Nowland

Date of Approval: 20/06/2022 Expiry Date: 20/06/2027



The Bremick® Region D™ Assemblies

have been tested and proven for water tightness in a rainfall simulation at an intensity of 260mm per hour.

Design Capacities Bremick's Region D™ Cyclone Assemblies

From Bremick® NT Deemed To Comply Manual

Region D Cyclone Assemblies – Design Capacities

Cyclonic Assembly Hex Head	Roof Sheet Type	Sheet Gauge (mm)	Roof Cladding Support	Screw Pitch (mm)	Maximum Cladding Span (mm)	Bremick Cyclonic Testing Design Capacity		NT DTC Highest Published Design Pressure (1)
						Pull Out (kN)	Pressure (kPa)	Pressure (kPa)
SDM 14-10 x 55mm	Square Rib/Pan	0.42	G450 1.5mm steel purlin	190	900	1.36	7.24	7.23
		0.48				1.5	7.97 (2)	9.09 (2)
Type 17 14-10 x 65mm		0.42	Timber MGP 10			1.36	7.24	7.23
		0.48				1.5	9.05 (3)	9.09 (3)
Vortex 6.2-13 x 55mm		0.42/0.48	G550 0.75mm steel batten			1.02	5.42	7.52
SDM 14-10 x 55mm	Corrugated	0.42	G450 1.5mm steel purlin	152		1.46	7.75	6.13
		0.48				1.46	7.75	7.55
Type 17 14-10 x 50mm		0.42	Timber MGP 10			1.46	7.75	6.13
		0.48				1.46	7.75	7.55
Vortex 6.2-13 x 55mm		0.42/0.48	G550 0.75mm steel batten			0.82	5.42	6.13

(1) These Design Pressures were based on the published data available from the NT Deemed to Comply Manual in Oct-2022

(2) Bremick's Design Pressure of 7.97 kPA passed the NCC 2019 Low Hi Low at a Test pressure of 11 kPa which is equivalent to the 9.09 kPa published Design Pressure due to the difference in the kT factors applied.

(3) Bremick's Design Pressure of 9.05 kPA passed the NCC 2019 Low Hi Low at a Test pressure of 12.50 kPa which is above the equivalent 9.09 kPa published Design Pressure due to the difference in the kT factors applied. The Bremick Deemed to Comply shows a Design Capacity of 7.97 kpa, however the James Cook University Test report shows a complying design capacity of 9.05 kPA

The above Roof Cladding Spans were selected for testing to exert the highest possible pull out forces on the Region D™ Cyclone Assembly.

ENGINEERING F.A.Q

QUESTION: If the Purlin/Batten spacings AND/OR the Design Pressure on a projects engineering specifications vary from the above support spans or Design Pressures, may different spans be adopted to achieve the required capacities of all Roof Cladding support members & the Cyclonic Fastener Assembly?

ANSWER: If support spacings differ to those provided on the design data sheets, the engineer can compare the design pull out screw assembly forces with the capacities provided.

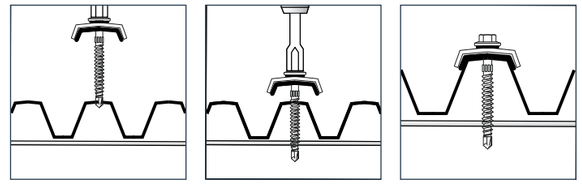
Installation Instructions and Mechanical Properties

INSTALLATION INSTRUCTIONS

INSTALLATION RECOMMENDATIONS

- For best results use a power screw driver with variable speed.
  - For timber 1000 RPM
  - For Steel 2000 to 2500 RPM.
- The use of battery screw drivers will significantly decrease drilling speed
- When fastening to Timber (JD3 min.) ensure a minimum screw embedment of 29mm in the timber.
- When fastening to metal battens or steel purlins, select a screw length to ensure at least 3 threads are above the metal batten/purlin after installation.
- Only use Bremick Drive Bits.
- In cyclonic regions consult the project Engineering specifications for fastener spacings.

SETTING INSTRUCTIONS



1. Position
Fit screw head into drive socket and locate screw point at centre of sheet rib.

2. Drill
With a power screw driver commence drilling at "slow speed " to pierce sheeting.

3. Set
Maintaining a firm down pressure increase the drive speed to penetrate the base material.
Continue driving until the seal seats firmly.

Mechanical Properties

Fastener Diameter - TPI	Single Shear KN	Axial Tensile KN	Torsional Nm
Vortex 6.2mm -13TPI	11.0	16.7	14.1
SDM 14ga - 10TPI	11.1	20.3	20.8
SDM 14ga - 14TPI	11.4	19.5	21.0
SDM T17 14ga - 10TPI	11.6	20.3	20.8

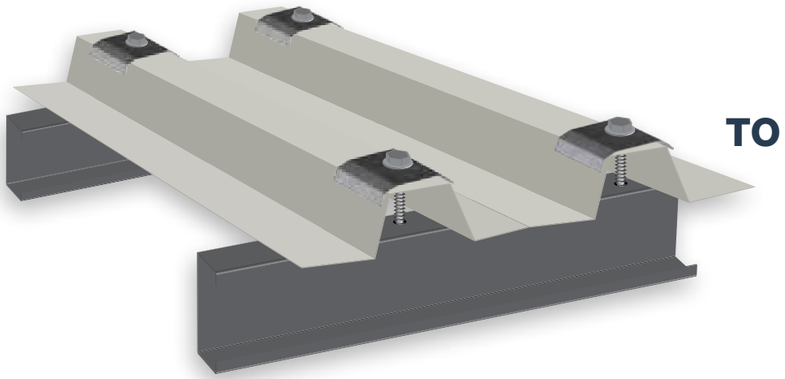
BREMICK® REGION D™ CYCLONE ASSEMBLY RANGE

For fastening the crests of roof sheeting in high wind & cyclonic regions

FOR FIXING TO STEEL PURLINS IN CYCLONIC REGIONS

REGION D™ - Cyclone Assemblies with SDM (Self Drilling for Metal Point)

Product Code	Size	Thread length	Coating	Pack Qty	Driver
SMHC814055R	14-10x55	40mm	B8 coating	250	3/8'' Hex
SMHC814065R	14-10x65	50mm	B8 coating	200	3/8'' Hex
SMHC814075R	14-10x75	60mm	B8 coating	100	3/8'' Hex
SMHC814095R	14-10x95	80mm	B8 coating	100	3/8'' Hex
SMHC414115R	14-14x115	75mm	Armourcoat 4	100	3/8'' Hex
SMHC414125R	14-14x125	75mm	Armourcoat 4	100	3/8'' Hex
SMHC414135R	14-14x135	95mm	Armourcoat 4	100	3/8'' Hex
SMHC414150R	14-14x150	95mm	Armourcoat 4	100	3/8'' Hex
SMHC414175R	14-14x175	120mm	Armourcoat 4	100	3/8'' Hex
SMHC414205R	14-14x205	120mm	Armourcoat 4	100	3/8'' Hex

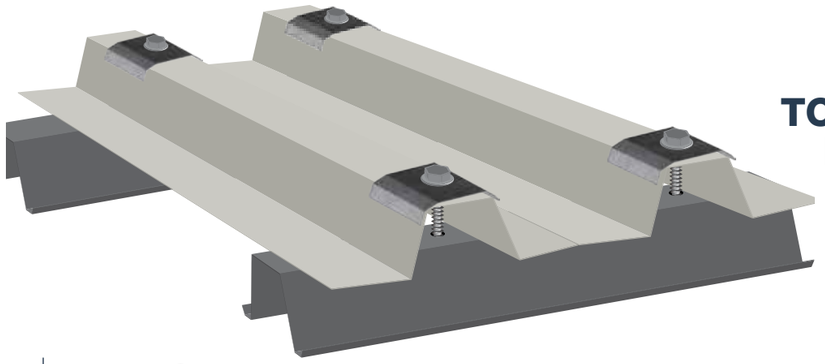


TO PURLIN

FOR FIXING TO TIMBER OR METAL BATTENS IN CYCLONIC REGIONS

REGION D™ - Cyclone Assemblies with Vortex™ Universal Point

Product Code	Size	Thread length	Coating	Pack Qty	Driver
SUHC862055R	6.2-13x55	30mm	B8 coating	250	3/8'' Hex
SUHC862065R	6.2-13x65	40mm	B8 coating	200	3/8'' Hex



TO METAL BATTEN

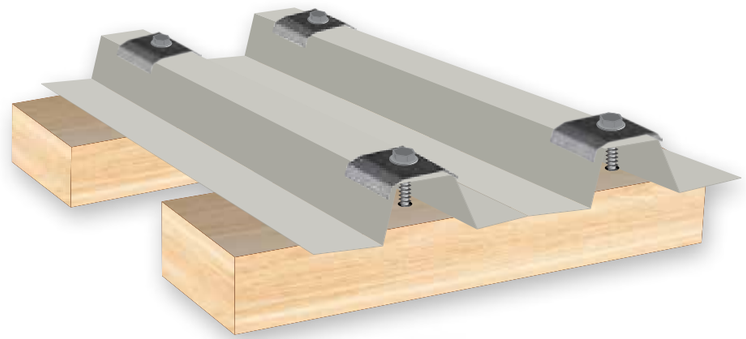
BREMICK® REGION D™ CYCLONE ASSEMBLY RANGE

For fastening the crests of roof sheeting in high wind & cyclonic regions

FOR FIXING TO STEEL TIMBER IN CYCLONIC REGIONS

REGION D™ - Cyclone Assemblies with Type 17 Point

Product Code	Size	Thread length	Coating	Pack Qty	Driver
STHC814050R	14-10x50	42mm	B8 coating	250	3/8'' Hex
STHC814065R	14-10x65	57mm	B8 coating	200	3/8'' Hex
STHC814075R	14-10x75	67mm	B8 coating	100	3/8'' Hex
STHC814090R	14-10x90	82mm	B8 coating	100	3/8'' Hex
STHC814100R	14-10x100	92mm	B8 coating	100	3/8'' Hex
STHC414115R	14-10x115	80mm	Armourcoat 4	100	3/8'' Hex
STHC414125R	14-10x125	80mm	Armourcoat 4	100	3/8'' Hex
STHC414150R	14-10x150	100mm	Armourcoat 4	100	3/8'' Hex
STHC414175R	14-10x175	100mm	Armourcoat 4	100	3/8'' Hex
STHC414200R	14-10x200	100mm	Armourcoat 4	100	3/8'' Hex



TO TIMBER

REGION D™ COLORBOND® COLOURS

Full range of Painted Region D™ Cyclone Assemblies available in COLORBOND® Steel & Ultra Steel, Colorsteel® & MAXX™ colours.

®,™ *All colours listed above are Trademarks of Bluescope Steel Ltd*

BREMICK – Intellectual Property Statement

The Bremick® Region D™ Cyclone Assembly is Protected by a Registered Design.

Vortex™ is Patented by Bremick.
Bremick® , Vortex™, ArmourCoat®, B8 ® are Trademarks of Bremick.

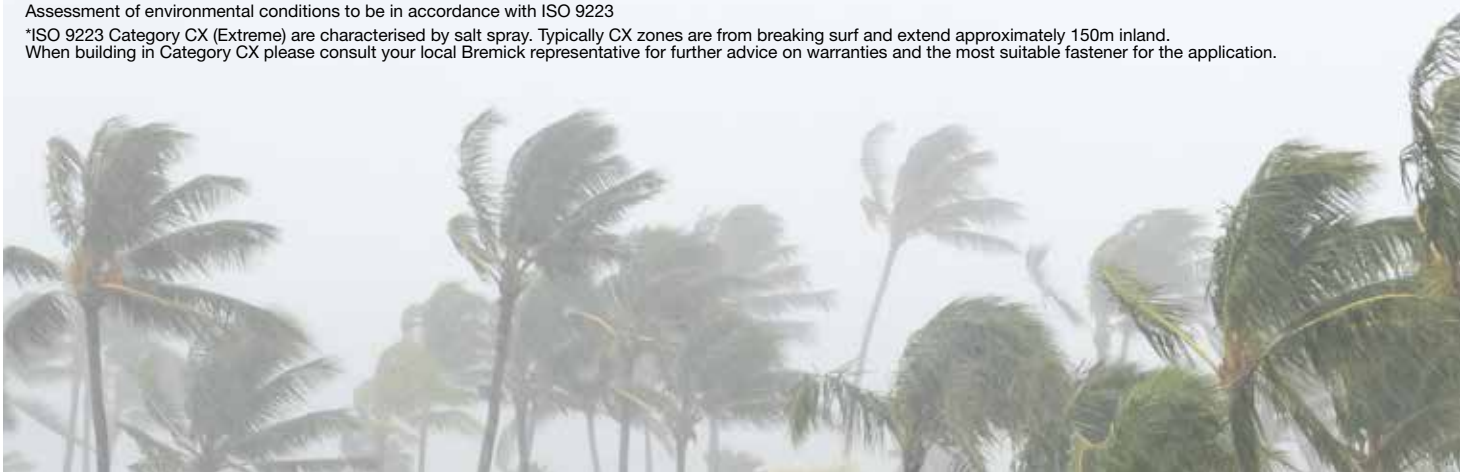
CORROSION PROTECTION WARRANTY

ENVIRONMENTAL CONDITIONS	WARRANTY PERIOD		
	AS 3566 Class 3	AS 3566 Class 4	REVOLUTION B8
SEVERE MARINE (ISO 9223 CATEGORY 4) Occurs mainly on the coast in areas with rough seas and surf it extends from several hundred metres to 1km inland	NOT RECOMMENDED	15 YEARS	20 YEARS
VERY SEVERE INDUSTRIAL (ISO 9223 CATEGORY 5*) Aggressive industrial areas.	NOT RECOMMENDED	NOT RECOMMENDED	15 YEARS
VERY SEVERE MARINE (ISO 9223 CATEGORY 5*) Typically C5 zones start from around 150m from breaking surf and extend several hundred metres inland. C5 zones are characterised by salt in the air but not impacted by salt spray/mist.	NOT RECOMMENDED	NOT RECOMMENDED	10 YEARS

Due to changes in the Consumer Warranty Laws, Bremick has aligned the warranty period for its products to be consistent with the warranty period of the major roofing material suppliers. AS3566.2 Outdoor Exposure testing results indicate the lifespan of our products to extend beyond the warranty period.

Assessment of environmental conditions to be in accordance with ISO 9223

*ISO 9223 Category CX (Extreme) are characterised by salt spray. Typically CX zones are from breaking surf and extend approximately 150m inland.
When building in Category CX please consult your local Bremick representative for further advice on warranties and the most suitable fastener for the application.



CONTACT YOUR NEAREST BREMICK BRANCH

OCT 2023

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