

Our Ref: 20935

December 2018

Mortec Industries  
2/43 Lara Way  
Campbellfield, VIC, 3061

### **Mortec Adjustable Tilt Legs System for use within Australia**

Dome Consulting (Aust) Pty Ltd have carried out a structural design check of the Mortec Industries Adjustable Tilt Legs System for use in Australia. The design check has been based on the information provided by Mortec Industries

#### **Australian Standards**

AS 1170. 2011 – Structural Design Actions

Part 0 – General Principles

Part 1 – Permanent imposed and other actions

Part 2 – Wind Actions

Part 3 – Snow and Ice Actions

AS 1664.1 – Aluminium structures - Limit state design

#### **Following design criteria has been used for the structural verification**

Wind Region A, B, C, D

Wind Terrain Category 2 & 3

Wind average recurrence interval of 100 years

Maximum Building height 20 m

Max. Solar Panel Dimensions 2040×1000

The design and documentation has determined that all supporting componentry in the above mentioned documentation was found to be acceptable.

**Refer to attached summary table for interface spacing.**

Construction is to be carried out strictly in accordance with the manufacturers instructions. This work was designed in accordance with the provisions of Australian Building Regulations and in accordance with sound, widely accepted engineering principles

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## Structural Design Summary Table

### Adjustable Tilt Legs System

For

Mortec Industries  
in accordance to AS1170.2 2011 Amdt 5 - June 2017

### Terrain Category 3

**Tin Roof**

**$10^\circ < a < 15^\circ$**

**Terrain category 3**

**Roof Angle  $< 10^\circ$**

**Adjustable Tilt Leg**

For Up To 2040m Long Panels (2 Rails)									
Max. Support Spacing (mm)									
Installation Height (m)	Region A		Region B			Region C		Region D	
	Center	Edge	Center	Edge		Center	Edge	Center	Edge
10 m	1940	1666	1886	1638		1678	1455	1420	979
15 m	1839	1591	1787	1564		1604	1334	1323	856
20 m	1764	1540	1737	1513		1529	1209	1176	759

**Tin Roof**

**$15^\circ < a < 30^\circ$**

**Terrain category 3**

**Roof Angle  $< 10^\circ$**

**Adjustable Tilt Leg**

For Up To 2040m Long Panels (2 Rails)									
Max. Support Spacing (mm)									
Installation Height (m)	Region A		Region B			Region C		Region D	
	Center	Edge	Center	Edge		Center	Edge	Center	Edge
10 m	1567	1391	1537	1290		1283	839	809	538
15 m	1516	1343	1490	1117		1112	714	709	465
20 m	1466	1293	992	1439		913	640	635	415

**Tin Roof**

**$30^\circ < a < 60^\circ$**

**Terrain category 3**

**Roof Angle  $< 10^\circ$**

**Adjustable Tilt Leg**

For Up To 2040m Long Panels (2 Rails)									
Max. Support Spacing (mm)									
Installation Height (m)	Region A		Region B			Region C		Region D	
	Center	Edge	Center	Edge		Center	Edge	Center	Edge
10 m	1493	1316	1463	1043		1037	667	662	441
15 m	1418	1269	1364	894		889	593	562	368
20 m	1367	1119	1239	792		788	519	515	341

## Notes

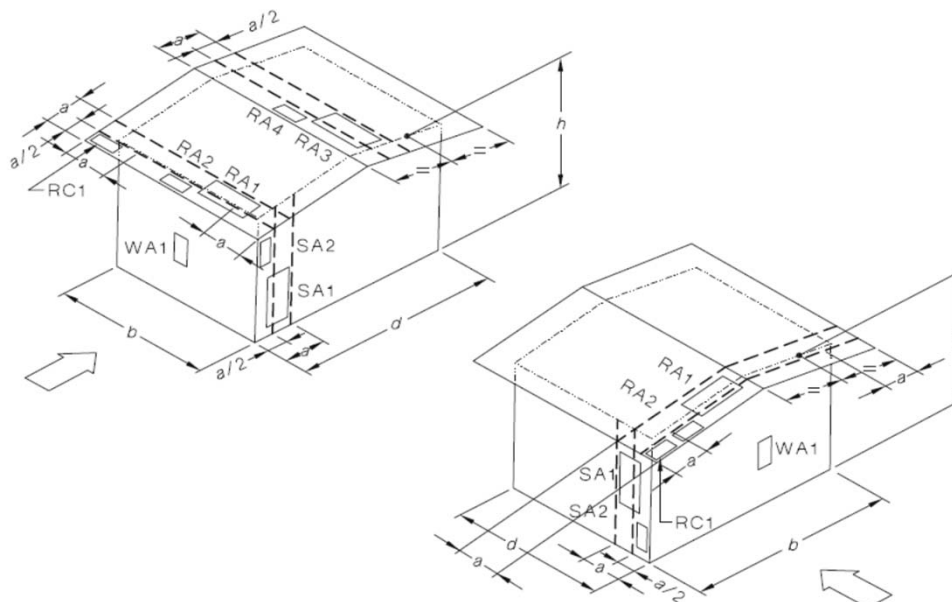
- \* Minimum 35mm embedment length into timber
- \* Please note that the screws provided with our products are designed for mounting in to wooden and metal structures. Mortec industries recommend using 13-11x50 RoofStars - Self Drilling Screws from ICONS® to fix to steel purlins.
- \* Above spacing based on 1.9mm steel purlin or F17 Hardwood - Following reductions shall be applied

Material	Wind region C			Wind region C	
	Centre	Edge		Centre	Edge
0.55mm steel batten	22%	25%		30%	42%
0.75mm steel batten	n/a	n/a		10%	5%

- \* Please consult Mortec industries for installing PV modules with a greater length than 2040mm.
- \* For PV panels with length of 1700mm, increase the spacing by 15%.

**Terrain Category 2 (TC2)** Open terrain, including grassland, with well-scattered obstructions having heights generally from 1.5 m to 5 m, with no more than two obstructions per hectare, e.g. farmland and cleared subdivisions with isolated trees and uncut grass.

**Terrain Category 3 (TC3)** Terrain with numerous closely spaced obstructions having heights generally from 3 m to 10 m. The minimum density of obstructions shall be at least the equivalent of 10 house-size obstructions per hectare, e.g. suburban housing, light industrial estates or dense forests.



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## **Structural Design Summary Table**

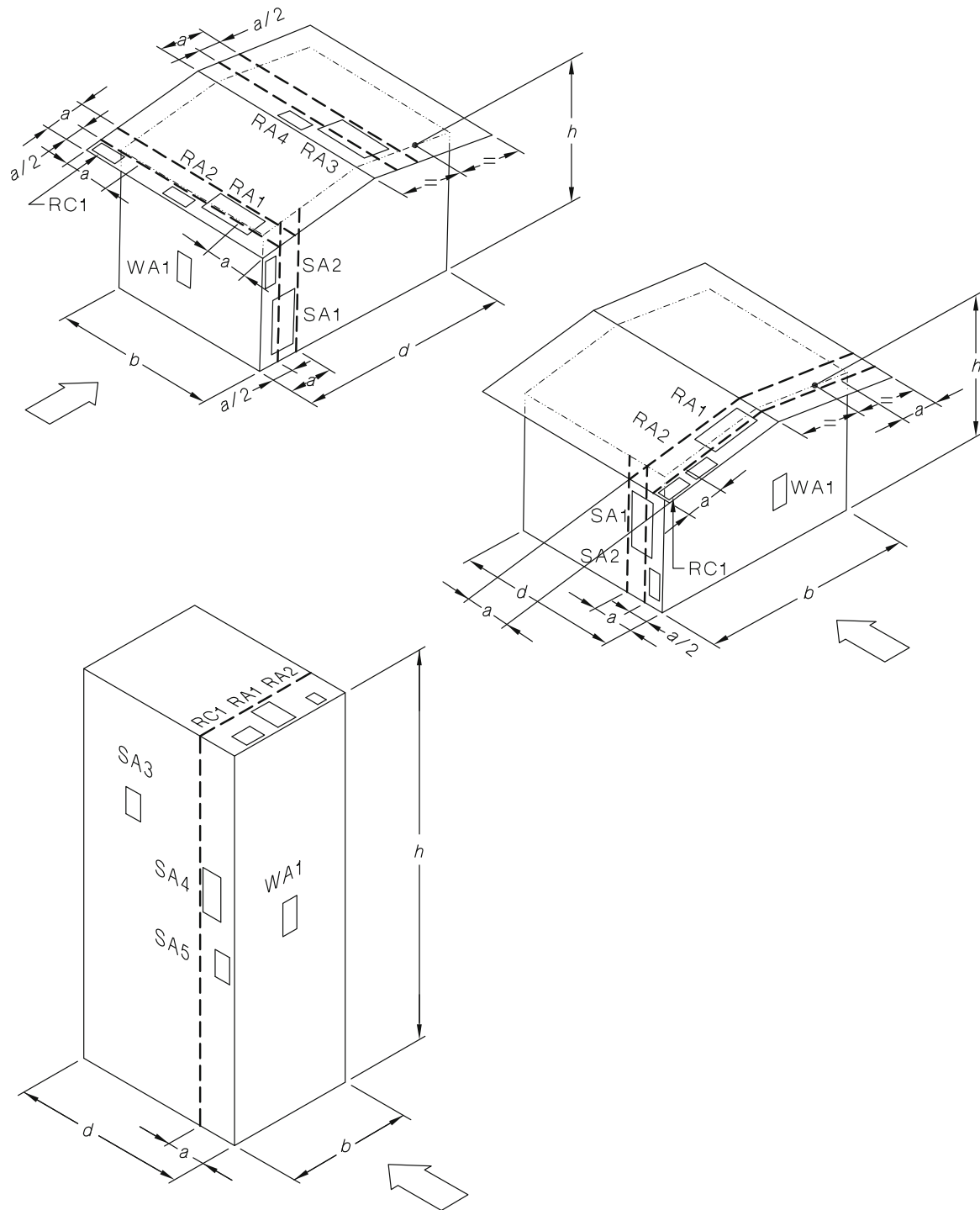
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### **Terrain Category 2**

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## NOTES:

- 1 The value of dimension  $a$  is the minimum of  $0.2b$ ,  $0.2d$  and  $h$ .
- 2 The side ratio of any local pressure factor area on the roof shall not exceed 4.

FIGURE 5.3 LOCAL PRESSURE FACTORS ( $K_f$ )**5.4.5 Permeable cladding reduction factor ( $K_p$ ) for roofs and side walls**

The permeable cladding reduction factor ( $K_p$ ) shall be taken as 1.0 except that where an external surface consists of permeable cladding and the open area ratio is greater than 0.1% and less than 1%, the values given in Table 5.8 may be used for negative pressure. The open-area ratio is the ratio of the open area of the surface to the total area of the surface. Figure 5.4 shows dimension  $d_a$ .

A4