Seismic force calculation
(as per NZS 4219:2009)

Product: Rinnai INFINITY A-series gas continuous flow water heaters

Earthquake load demand as per section 3.4

EQ load demand	F	23.409
F=C x W (equation 3.1) Appliance weight[1]	W	17 .00
Building placement factor[2]	CH	1
Zone factor[3]	Z	0.6
Performance factor	CP	0.85
Risk factor[4]	Rc	1
Lateral force coefficient 2.7 x CH x Z x CP x Rc (equation 3)	C	1.377

[1] Assumes 15 kg max for A26, other A-series models weigh less
[2] Assumes appliance is located at ground floor level
[3] Assumes worst case zone factor based on table NZS 4219 Table 3
[4] Assumes building importance of 4 and component value of P5 based on NZS 4219:2009 Table 2 and Table 1 calculated as per NZS 4219:2009 3.4.3 Table 5

Relative seismic displacement as per section 3.5

Height between fixing points[1]	Hz	0.571
Component displacement 0.025 x Rc x Hz (equation 3.3)	D	0.001428

[1] Assumes 571 mm on a A-series unit between top and bottom bracket hole centroids

Combined action on component

kg - 273.9906

kn - 2.685108 (safety factor 1.936607)

Rinnai A-series CFWH mounting brackets and hardware has been tested for shear force by SGS in test reports INZ 61025-01 and 61025-02

- Shear force of mounting bracket   5.2 kN
- Shear force of M5 screw   10.0 kN

Fixing suggestions
- Timber fixing: as per NZS 4219:2009 Table 9, 8 mm diameter coach screw inserted into grain side dry radiata pine timber
- Steel fixing: as per NZS 4219:2009 Table 10, M8 bolt
- Masonry drill in fixing: 8 mm (M6) Ramset dynabolt as per Ramset Technical Resource 31.1

Please note: The calculation only pertains to the appliance and not the associated pipework.

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