



BRANZ Appraised

Appraisal No. 761 [2017]

SIMPLEFIX WATER STORAGE CYLINDER RESTRAINT KITS

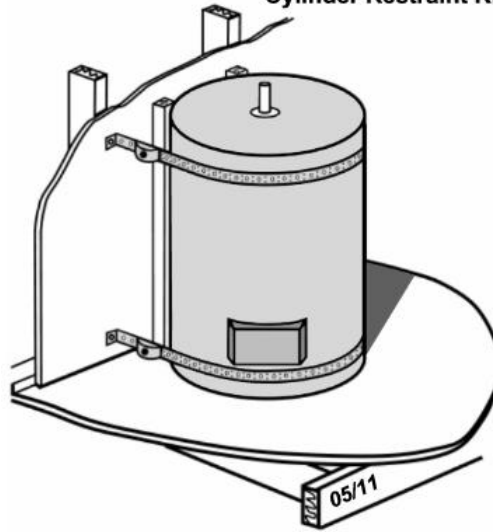
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This Appraisal replaces BRANZ Appraisal No. 761 [2011]

Amended 11 May 2018



Cylinder Restraint Kit



BRANZ Appraisals

Technical Assessments of products for building and construction.



Ray Staiger Limited

93 Ruffell Road

Te Rapa

Hamilton

Ph : 07 850 4200

Fax: 07 850 4204

Web: www.simplefix.co.nz



BRANZ

BRANZ

1222 Moonshine Rd,

RD1, Porirua 5381

Private Bag 50 908

Porirua 5240,

New Zealand

Tel: 04 237 1170

branz.co.nz



Product

- 1.1 The SimpleFix and SimpleFix Stainless Cylinder Restraint Kits are for seismically restraining water storage cylinders.

Scope

- 2.1 The SimpleFix and SimpleFix Stainless Cylinder Restraint Kits are used for seismically restraining water storage cylinders up to 700 litres.
- 2.2 The SimpleFix Cylinder Restraint Kits are for use with timber framed buildings in dry interior environments.
- 2.3 The SimpleFix Stainless Cylinder Restraint Kits are for use with timber framed buildings in dry interior or in external environments.

Building Regulations

New Zealand Building Code (NZBC)

- 3.1 In the opinion of BRANZ, the SimpleFix and SimpleFix Stainless Cylinder Restraint Kits if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet the following provisions of the NZBC:

Clause B1 STRUCTURE: Performance B1.3.1, B1.3.2 and B1.3.4. The SimpleFix and SimpleFix Stainless Cylinder Restraint Kits meet the requirements for loads arising from earthquake [i.e. B1.3.3 (f)].

Clause B2 DURABILITY: Performance B2.3.1 (b) 15 years. The SimpleFix and SimpleFix Stainless Cylinder Restraint Kits meet this requirement.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. The SimpleFix and SimpleFix Stainless Cylinder Restraint Kits meet this requirement and will not present a health hazard to people.



Technical Specification

- 4.1 The SimpleFix Cylinder Restraint Kit components and accessories supplied by Ray Staiger Limited are:
- Galvanised strap, 25 x 0.75 mm, G550
 - Galvanised strap, 25 x 0.75 mm, G550, powder coated.
 - Galvanised earthquake brackets.
 - Tensioning device.
 - Type 17 screws, 55 mm long.
 - M5 bolts and nuts for connecting the straps to the earthquake brackets.
- 4.2 The SimpleFix Stainless Cylinder Restraint Kit components and accessories supplied by Ray Staiger Limited are:
- Grade 304 stainless steel strap, 25 x 0.70 mm, G550.
 - Grade 304 stainless steel earthquake brackets.
 - Grade 304 stainless steel tensioning device.
 - Grade 304 stainless steel type 17 screws, 55 mm long.
 - Grade 304 stainless steel M5 bolts and nuts for connecting the straps and the earthquake brackets.

Handling and Storage

- 5.1 The SimpleFix Cylinder Restraint Kits are reasonably robust, but must be kept dry before and after installation. The SimpleFix Stainless Cylinder Restraint Kits should be kept dry before installation.

Technical Literature

- 6.1 Refer to the Appraisals listing on the BRANZ website for details of the current Technical Literature for SimpleFix and SimpleFix Stainless Cylinder Restraint Kits. A copy of the installation instructions is included with each kit. The Technical Literature must be read in conjunction with this Appraisal. All aspects of design, installation, use and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.

Design Information

- 7.1 SimpleFix Cylinder Restraint Kits are for use in dry, internal environments. The galvanised strap is optionally available powder coated white and other selected colours. SimpleFix Stainless Cylinder Restraint Kits are for use in interior or exterior environments.
- 7.2 For water storage cylinders up to 360 litres capacity the SimpleFix and SimpleFix Stainless Cylinder Restraint Kits are an Acceptable Solution in accordance with NZBC Acceptable Solution G12/AS1 Paragraph 6.11.4. For cylinders over 360 litres capacity the SimpleFix and SimpleFix Stainless Cylinder Restraint Kits are an Alternative Solution to the NZBC and at the design stage of the timber wall framing consideration should be given as to how earthquake loads will be transferred from the studs to the top and bottom plates.
- 7.3 Floor framing, flooring and platforms must be designed to support the water storage cylinder.

Structure

- 8.1 The number of straps required when using the SimpleFix and SimpleFix Stainless Cylinder Restraint Kits depends on the size of the cylinder to be restrained and the height of the cylinder within the building. Table 1 below gives the number of straps to be used.
- 8.2 When the cylinder is to be installed more than 12 m above the ground an additional strap is required to the number given in Table 1.

Table 1: Cylinder Strap Requirements

Cylinder Size	Number of Straps Required
Up to 200 litre capacity	2
201 litre up to 360 litre capacity	3
361 litre up to 500 litre capacity	4
501 litre up to 600 litre capacity	5
601 litre up to 700 litre capacity	6

Durability

Serviceable Life

- 9.1 The components of SimpleFix Cylinder Restraint Kits are all steel. As long as they are kept dry in service they are expected to have the same serviceable life as the cylinders that they restrain.
- 9.2 The components of SimpleFix Stainless Cylinder Restraint Kits are all Grade 304 stainless steel. They are expected to have the same serviceable life as the cylinders that they restrain.

Maintenance

- 10.1 The SimpleFix Cylinder Restraint Kits will require little maintenance as long as they are kept dry. Any damaged straps or fixings must be replaced.
- 10.2 The SimpleFix Stainless Cylinder Restraint Kits will require little maintenance. Any damaged straps or fixings must be replaced.

Installation Information

- 11.1 Timber vertical blocking as described in NZBC Acceptable Solution G12/AS1 Paragraph 6.11.4 and Figure 14 must be installed. For external installations, suitably treated timber and fixings must be used. Separation between any treated timber and the water cylinder may be necessary.
- 11.2 SimpleFix and SimpleFix Stainless Cylinder Restraint Kits are installed in accordance with the Technical Literature. The earthquake brackets are screwed to the framing using the supplied screws. A suitable length of strap is then cut from the supplied reel. This is fixed to the earthquake brackets with the M5 bolts and nuts. The tensioner is then used to take up the slack in the strap.
- 11.3 The top strap must be no more than 100 mm from the top of the cylinder and the bottom strap no more than 100 mm from the bottom of the cylinder. If more than two straps are used these should be evenly distributed up the height of the cylinder.

Basis of Appraisal

The following is a summary of the technical investigations carried out:

Tests

- 12.1 Tensile tests were carried out to determine the strength of the system. These have been reviewed and found to be satisfactory.

Investigations

- 13.1 Structural calculations have been carried out. These have been reviewed by BRANZ and found to be satisfactory.

Quality

- 14.1 Details of the quality and composition of the materials used were obtained by BRANZ and found to be satisfactory.
- 14.2 Ray Staiger Limited is responsible for the quality of the product supplied.
- 14.3 The quality of installation, in accordance with the instructions of Ray Staiger Limited, is the responsibility of the installer.



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Appraisal No. 761 [2017]

BRANZ Appraisal
Appraisal No. 761 [2017]
10 November 2017

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Sources of Information

- Ministry of Business, Innovation and Employment Record of amendments - Acceptable Solutions, Verification Methods and handbooks.
- The Building Regulations 1992.

Amendments

Amendment No.1, dated 11 May 2018.

This Appraisal has been amended to include the powder coated strap option to the product range.



BRANZ Appraised
Appraisal No. 761 [2017]

BRANZ Appraisal
Appraisal No. 761 [2017]
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In the opinion of BRANZ, **SimpleFix Water Storage Cylinder Restraint Kits** are fit for purpose and will comply with the Building Code to the extent specified in this Appraisal provided they are used, designed, installed and maintained as set out in this Appraisal.

The Appraisal is issued only to **Ray Staiger Limited**, and is valid until further notice, subject to the Conditions of Appraisal.

Conditions of Appraisal

1. This Appraisal:
 - a) relates only to the product as described herein;
 - b) must be read, considered and used in full together with the Technical Literature;
 - c) does not address any Legislation, Regulations, Codes or Standards, not specifically named herein;
 - d) is copyright of BRANZ.
2. **Ray Staiger Limited:**
 - a) continues to have the product reviewed by BRANZ;
 - b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
 - c) abides by the BRANZ Appraisals Services Terms and Conditions;
 - d) warrants that the product and the manufacturing process for the product are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ pursuant to BRANZ's Appraisal of the product.
3. BRANZ makes no representation or warranty as to:
 - a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
 - b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
 - c) any guarantee or warranty offered by **Ray Staiger Limited**.
4. Any reference in this Appraisal to any other publication shall be read as a reference to the version of the publication specified in this Appraisal.
5. BRANZ provides no certification, guarantee, indemnity or warranty, to **Ray Staiger Limited** or any third party.

For BRANZ

Chelydra Percy

Chief Executive

Date of Issue:

10 November 2017