



BRANZ Appraised
Appraisal No. 1146 [2021]

CONEX BÄNNINGER >B< PRESS COPPER AND COPPER ALLOY FITTINGS



Appraisal No. 1146 [2021]

Amended 28 October 2022

BRANZ Appraisals

Technical Assessments of products
for building and construction.

Conex | Bänninger

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Product

- 1.1 The Conex Bänninger >B< Press Copper and Copper Alloy Fittings are 3-point press fittings which contain an Ethylene Propylene Diene Monomer [EPDM] O-ring and are used with copper pipes for water supply, as specified in NZBC Verification Method G12/VM1.
- 1.2 The Conex Bänninger >B< Press Copper and Copper Alloy Fittings are for use in hot and cold potable water supply services and for proprietary heating systems subject to specific design.

Scope

- 2.1 The Conex Bänninger >B< Press Copper and Copper Alloy Fittings have been appraised for use as the piping components for water supply as specified in NZBC Verification Method G12/VM1; and for proprietary heating systems subject to specific design.
- 2.2 The Conex Bänninger >B< Press Copper and Copper Alloy Fittings shall be used at working temperatures and pressures of up to 80°C and up to 1 MPa.
- 2.3 The Conex Bänninger >B< Press Copper and Copper Alloy Fittings shall not be cast into concrete, under slabs, or installed in a masonry cavity.

Building Regulations

New Zealand Building Code (NZBC)

- 3.1 In the opinion of BRANZ, the Conex Bänninger >B< Press Copper and Copper Alloy Fittings, if designed, used, installed and maintained in accordance with the statements and conditions of this Appraisal, will meet or contribute to meeting the following provisions of the NZBC:

Clause B2 DURABILITY: Performance B2.3.1 [a] not less than 50 years, [b] 15 years and B2.3.1 [c] 5 years. The Conex Bänninger >B< Press Copper and Copper Alloy Fittings meet these requirements. See Paragraph 8.1.

Clause F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. The Conex Bänninger >B< Press Copper and Copper Alloy Fittings meet this requirement.

Clause G10 PIPED SERVICES: Performance G10.3.1 [a]. The Conex Bänninger >B< Press Copper and Copper Alloy Fittings meet this requirement when used in heating systems. See Paragraph 11.1.

Clause G12 WATER SUPPLIES: Performance G12.3.2 [c] and G12.3.7 [a] and [b]. The Conex Bänninger >B< Press Copper and Copper Alloy Fittings meet these requirements. See Paragraphs 12.1-12.3.

Technical Specification

Description

- 4.1 The Conex Bänninger >B< Press Copper and Copper Alloy Fittings are manufactured from grade Cu-DHP copper or EN1982 CC499K red brass.
- 4.2 The following types of Conex Bänninger >B< Press Copper and Copper Alloy Fittings are covered by this Appraisal:

Item	Material	Size
Female Elbow	Red Brass	15 x 1/2"; 20 x 3/4"
Male Elbow	Red Brass	15 x 1/2; 20 x 3/4
Male Coupler	Red Brass	15 x 1/2"; 15 x 3/4"; 20 x 1/2"; 20 x 3/4"; 25 x 3/4"; 25 x 1"; 32 x 1 1/4"; 40 x 1 1/2"; 50 x 2"
Female Coupler	Red Brass	15 x 1/2"; 20 x 3/4"; 25 x 1"; 32 x 1 1/4"; 40 x 1 1/2"; 50 x 2"
Tank Connector	Red Brass	15 x 1/2"; 20 x 3/4"; 25 x 1"; 32 x 1-1/4"; 40 x 1-1/2"; 50 x 2"
Female Wallplate Elbow	Red Brass	15 x 1/2"; 20 x 3/4"
Male Wallplate Elbow	Red Brass	15 x 1/2"
90° Street Elbow	Copper	15; 20; 25
90° Elbow	Copper	15; 20; 25; 32; 40; 50
Bent Tap Connector	Copper	15 x15; 20 x20
45° Street Elbow	Copper	15 x15, 20 x20, 25 x25
45° Elbow	Copper	15; 20; 25 ; 32; 40; 50
Equal Tee	Copper	15; 20; 25; 32; 40; 50
Reduced Branch Tee	Copper	20 x 15 x 15; 20 x 15 x 20; 20 x 20 x 15; 25 x 25 x 15; 25 x 25 x 20; 32 x 32 x 15; 32 x 20 x 32; 32 x 32 x 25; 40 x40x 20; 40 x 25 x 40; 40 x 40 x 32; 50 x 50 x 25; 50 x 50 x 40
Reduced Coupler	Copper	20 x 15; 25 x 15; 25 x 20; 32 x 25; 40 x 25; 40 x 32; 50 x 25; 50 x 32; 50 x 40
Straight Tap Connector	Copper	1/2" x 1/2", 3/4" x 3/4"
Bent Tap Connector	Copper	1/2" x 1/2", 3/4" x 3/4"
Fitting Reducer	Copper	20 x 15; 25 x 15; 25 x 20; 32 x 20; 32 x 25; 40 x 25; 40 x 32; 50 x 32; 50 x 40
Straight Connector	Copper	15; 20; 25; 32; 40; 50
Slip Coupler	Copper	15; 20; 25; 32; 40; 50
Stop End	Copper	15; 20; 25; 32; 40; 50

[Note: All measurements are metric unless indicated to be imperial.]

- 4.3 The Conex Bänninger >B< Press Copper and Copper Alloy Fittings incorporate a black EPDM O-ring. The fittings have sufficient hoop strength to allow a 3-point press on either side of the sealing element, providing the mechanical strength to resist the fitting pulling apart when under pressure.
- 4.4 The Conex Bänninger >B< Press Copper and Copper Alloy Fittings are marked with the brand >B<, and size. Packaging includes the marking of a batch number identifying the date of manufacture and the general sequence within the batch.



Tools

- 4.5 Conex Bänninger specified tools are required to be used for the installation of Conex Bänninger >B< Press Copper and Copper Alloy Fittings. The tools have not been evaluated by BRANZ.

Pipes

- 4.6 Copper piping components for water supply are supplied by the installer to the specifications of NZBC Verification Method G12/VM1.

Handling and Storage

- 5.1 The Conex Bänninger >B< Press Copper and Copper Alloy Fittings components must be handled and stored with care to prevent damage. They must be stored in a dry, clean environment, free of corrosive gas or other materials, where they cannot be struck by sharp objects, collide with other materials, or be dropped or thrown.

Technical Literature

- 6.1 This Appraisal must be read in conjunction with:
- >B<Press Fitting System, Technical Guide, V5, Brochure code 2130196, pages 18-19 and 68-73, Brochure code 2130196.
- 6.2 All aspects of design, use, installation and maintenance contained in the Technical Literature and within the scope of this Appraisal must be followed.

Design Information

General

- 7.1 Conex Bänninger >B< Press Copper and Copper Alloy Fittings are WRAS certified and have been tested to AS/NZS 4020. The system is an Alternative Solution to NZBC Verification Method G12/VM1, and must be designed and installed in accordance with the Technical Literature.
- 7.2 For potable water systems, the Conex Bänninger >B< Press Copper and Copper Alloy Fittings must only be installed with copper pipes for water supply, as specified in NZBC Verification Method G12/VM1 and pressed by a Conex Bänninger specified press tool.
- 7.3 Conex Bänninger >B< Press Copper and Copper Alloy Fittings are suitable for use with circulation pipes for controlled heat source type heating systems, subject to the limitations of Paragraph 11.1. These systems are to a specific design by the heating system proprietor, and components other than the Conex Bänninger >B< Press Copper and Copper Alloy Fittings are outside the scope of this Appraisal.
- 7.4 Provisions for tube expansions and contraction should be allowed for in the design of the system to accommodate these forces on all fittings and fixtures.
- 7.5 Table 21 of NZBC Acceptable Solution E2/AS1 must be followed to determine the compatibility of copper piping and fittings with other materials at the design stage. Where necessary, a physical separation layer must be provided.
- 7.6 Where there is a likelihood of freezing, NZBC Verification Method G12/VM1 must be complied with.
- 7.7 The Conex Bänninger >B< Press Copper and Copper Alloy Fittings shall not be cast into concrete, under slabs, or installed in a masonry cavity.
- 7.8 The Conex Bänninger >B< Press Copper and Copper Alloy Fittings are metallic and are used with metallic pipes, therefore NZBC Acceptable Solution G12/AS1 Section 9.0 must be complied with for equipotential bonding.
- 7.9 The Conex Bänninger >B< Press Copper and Copper Alloy Fittings must only be used with water that has a pH >7.4, or the total volume of organic carbon does not exceed TOC = 1.5 mg/L and pH = 7.0-7.4. Town supply will generally meet this requirement, uncontrolled water supplies should be tested regularly to confirm suitability.



Durability

Serviceable Life

- 8.1 All the Conex Bänninger >B< Press Copper and Copper Alloy Fittings, when used up to 80°C and up to 1 MPa, and when installed and used in accordance with the Technical Literature and this Appraisal, have the following serviceable life:
- Tap fittings: 5 years.
 - All other fittings: at least 50 years.
- 8.2 The Conex Bänninger >B< Press Copper and Copper Alloy Fittings may be affected in the same manner as other copper piping systems by water quality and aggressive environments. This assumes the system is not filled with 'soft' water, non-potable water or with water containing high levels of chlorine [i.e. in excess of that normally found in treated potable water].

Maintenance

- 9.1 The Conex Bänninger >B< Press Copper and Copper Alloy Fittings hot and cold water supply components and heating system components do not require any special maintenance. Items such as valves and control equipment must be maintained to ensure the maximum working pressures and temperatures are not exceeded.

Control of Internal Fire and Smoke Spread

- 10.1 In all applications where the Conex Bänninger >B< Press Copper and Copper Alloy Fittings pass through a fire rated element of a structure, the opening must be fire-stopped in a way that will permit thermal movement of the pipe fittings and pipes.

Piped Services

- 11.1 When the Conex Bänninger >B< Press Copper and Copper Alloy Fittings are used for piped water services that are not for the supply of potable water, or water for personal hygiene, the permissible working pressure for a 50 year serviceable life is 1 MPa at 80°C.

Water Supplies

- 12.1 The Conex Bänninger >B< Press Copper and Copper Alloy Fittings are WRAS certified and have been tested to AS/NZS 4020 and are suitable for potable water supply.
- 12.2 When the Conex Bänninger >B< Press Copper and Copper Alloy Fittings are used for the supply of potable water or water for personal hygiene, the permissible working pressure for a 50 year serviceable life is 1 MPa at 80°C.
- 12.3 Clear identification is required where fittings and pipes are used for non-potable water in accordance with NZBC Acceptable Solution G12/AS1 Section 4.0.

Energy Efficiency

- 13.1 All domestic type hot water distribution systems must be insulated in accordance with the requirements of NZS 4305 Section 3.7 and 3.8.
- 13.2 Consideration must be given to pipe insulation of non-domestic hot water distribution systems. This is outside the scope of this Appraisal.

Installation Information

Installation Skill Level Requirement

- 14.1 Installation of the Conex Bänninger >B< Press Copper and Copper Alloy Fittings for potable water must always be carried out by, or under the supervision of, a registered and licensed plumber who also has undergone and passed training from Conex Universal Ltd or the Reece Group Ltd on installation and connection techniques.



General

- 15.1 When used for potable water supplies, installation of Conex Bänninger >B< Press Copper and Copper Alloy Fittings must be in accordance with AS/NZS 3500.1 and AS/NZS 3500.4, as specified by NZBC Verification Method G12/VM1.
- 15.2 When the Conex Bänninger >B< Press Copper and Copper Alloy Fittings are used for piped services that are not for the supply of potable water, or water for personal hygiene, the fittings must be to specific engineering design of the system incorporating the fittings.
- 15.3 The Conex Bänninger >B< Press Copper and Copper Alloy Fittings must be designed and installed in accordance with the requirements of this Appraisal and installation information in the Technical Literature.

Connecting Pipes and Fittings

- 15.4 Conex Bänninger specified press tools are required to be used for the installation of Conex Bänninger >B< Press Copper and Copper Alloy Fittings. The tools have not been evaluated by BRANZ.
- 15.5 Conex Bänninger >B< Press Copper and Copper Alloy Fittings are joined through the use of specifically designed press tools. Instructions on the correct methods for preparing the pipes and fittings and using the tools are provided in the Technical Literature.

Charging and Pressure Testing

- 16.1 Prior to enclosing the pipe system, whether it is for piping in wall or floor cavities, or heating systems, a visual check of every fitting is required to ensure joints have been properly formed.
- 16.2 The Conex Bänninger >B< Press Copper and Copper Alloy Fittings, after installation with suitable pipes, must be tested and commissioned in accordance with the requirements of NZBC Verification Method G12/VM1.
- 16.3 In addition to the requirements of Paragraph 16.2, testing of Conex Bänninger >B< Press Copper and Copper Alloy Fittings installations must also be carried out in accordance with the Technical Literature.

Basis of Appraisal

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

Tests

- 17.1 Tests have been carried out on the Conex Bänninger >B< Press Copper and Copper Alloy Fittings by independent testing organisations. The results of these tests have been reviewed by BRANZ experts and found to be satisfactory.
- 17.2 The Conex Bänninger >B< Press Copper and Copper Alloy Fittings are WRAS certified and were tested to AS/NZS 4020:2018.

Other Investigations

- 18.1 An assessment was made of the durability of the Conex Bänninger >B< Press Copper and Copper Alloy Fittings by BRANZ technical experts.
- 18.2 Site inspections were carried out by BRANZ to examine completed installations and installation methods.
- 18.3 The Technical Literature has been reviewed by BRANZ and found to be satisfactory.

Quality

- 19.1 The Conex Bänninger >B< Press Copper and Copper Alloy Fittings are manufactured by Conex Universal Ltd under an ISO 9001 Quality Management System.
- 19.2 Conex Universal Ltd is responsible for the quality of the product supplied.
- 19.3 Quality of installation on-site is the responsibility of the installer.



Sources of Information

- AS/NZS 3500.1:2015 Plumbing and drainage - Water services.
- AS/NZS 3500.1:2018 Plumbing and drainage - Water services.
- AS/NZS 3500.4:2015 Plumbing and drainage - Heated water services.
- AS/NZS 3500.4:2018 Plumbing and drainage - Heated water services.
- AS/NZS 4020:2018 Testing of products for use in contact with drinking water.
- NZS 3501:1976 Specification for copper tubes for water, gas, and sanitation.
- NZS 4305:1996 Energy Efficiency - Domestic type hot water systems.
- Ministry of Business, Innovation and Employment Record of Amendments - Acceptable Solutions, Verification Methods and Handbooks.
- The Building Regulations 1992.

Amendments

Amendment No. 1, dated 28 October 2022.

This Appraisal has been amended to update sections 4 and 8.



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02 September 2021

CONEX BÄNNINGER >B< PRESS
COPPER AND COPPER ALLOY
FITTINGS



In the opinion of BRANZ, **Conex Bänninger >B< Press Copper and Copper Alloy Fittings** 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 **Conex Universal Ltd**, 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. **Conex Universal Ltd**:
 - 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 **Conex Universal Ltd**
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 **Conex Universal Ltd** or any third party.

For BRANZ

Chelydra Percy

Chief Executive

Date of Issue:

02 September 2021