

7123AS AQUATHERM® FLEXI HOT & COLD WATER SYSTEM

1. GENERAL

This section relates to **aquatherm® flexi** potable water systems from the network utility supply authority water main to designated points and appliances, distributing piped hot water to appliances, and the installation of tap ware.

1.1 RELATED WORK

Refer to 7151 SANITARY FIXTURES, TAPWARE & ACCESSORIES for tapware selections.

Documents

1.2 DOCUMENTS

Refer to the general section 1233 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

[NZBC C/AS1-AS7](#) Protection from fire
[NZBC G4/AS1](#) Ventilation
[NZBC G12/AS1](#) Water supplies
[NZBC H1/AS1](#) Energy efficiency
[AS/NZS 2845.1](#) Water supply - Backflow prevention devices - Materials, design, and performance requirements
[AS 2845.3](#) Water supply - Backflow prevention devices - Field testing and maintenance
[AS/NZS 3500.5](#) Plumbing and drainage - Housing installations
[AS 3688](#) Water supply - Metallic fittings and end connections
[NZS 4305](#) Energy efficiency - Domestic type hot water systems
[NZS 4602](#) Low pressure copper thermal storage electric water heaters
[NZS 4607](#) Installation of thermal storage electric water heaters: valve vented Systems
[NZS 4617](#) Tempering (3-port mixing) valves
[AS/NZS 5601.1: 2010](#) Gas installations - general installations
[ISO 22391-2](#) Plastic piping systems for hot and cold water installations - polyethylene of raised temperature PERT
Gas (Safety and Measurement) Regulations 2010
[Plumbers, Gasfitters and Drainlayers Act 2006](#)

1.3 MANUFACTURER'S DOCUMENTS

Manufacturer's and supplier's documents relating to work in this section are:
aquatherm® flexi technical manual
[BRANZ Appraisal 708](#) - aquatherm® flexi Piping System

Manufacturer/supplier contact details:

Company: **aquatherm NZ Ltd**
Web: www.aquatherm.co.nz
Email: sales@aquatherm.co.nz
Telephone: 0-9-570 7204

Warranties

1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide an aquatherm® 50 year warranty of service life
10 years: For third party warranty for property and bodily damage (refer to Aquatherm NZ Ltd for details)

- Provide this warranty on the manufacturer/supplier standard form.
- Commence the warranty from the date of completion of system testing.

Refer to the general section 1237 WARRANTIES for additional requirements.

- 1.5 **WARRANTY - INSTALLER**
Provide an installer warranty:
2 years: For work under normal environment and use conditions and failure of execution

- Provide this warranty on the installer's standard form.
- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

- 1.6 **NO SUBSTITUTIONS**
Substitutions are not permitted to any specified aquatherm[®] flexi or associated products, components or accessories.

- 1.7 **QUALIFICATIONS**
Plumbers to be certified aquatherm[®] installers, familiar with the materials and the techniques specified. Carry out all work under the direct supervision of a certifying plumber under the [Plumbers, Gasfitters and Drainlayers Act 2006](#).

- 1.8 **INFORMATION FOR MAINTENANCE MANUAL**
Supply maintenance manual information to requirements set out in the 1239 OPERATION & MAINTENANCE section.

Performance

- 1.9 **DURABILITY**
aquatherm[®] flexi meets the 50 year durability requirements of [NZBC B2/AS1](#) for pipes cast into concrete to Aquatherm requirements.

- 1.10 **TESTING**
Confirm the timing before carrying out any tests. Supply potable water and the apparatus needed. Ensure that any connected tapware is isolated before commencing testing. Test to aquatherm[®] flexi testing procedures as applicable. Provide completed test records in the aquatherm[®] New Zealand Products Catalogue standard form.

- 1.11 **GAS CERTIFICATE OF COMPLIANCE**
Provide a Certificate of Compliance (CoC) as required by the Gas (Safety and Measurement) Regulations 2010 to the owner, and when required provide a copy to the energy supplier before connection.

- 1.12 **GAS SAFETY CERTIFICATION**
Provide a Gas Safety Certificate (GSC) as required by the Gas (Safety and Measurement) Regulations 2010 and provide a copy to the owner and when required the BCA. To be provided at completion of the work, prior to Practical Completion.

- 1.13 **GAS APPLIANCE COMPLIANCE**
Supplier to provide Supplier Declaration of Compliance (SDoC) in accordance with the requirements of the Gas (Safety and Measurement) Regulations 2010.

2. PRODUCTS

Materials

- 2.1 **AQUATHERM FLEXI POLYETHYLENE RT WATER PIPE**
aquatherm[®] flexi pipes to ISO 22391-2 complete with sliding sleeves to AS 3688 and accessories brand-matched.

- 2.2 **WATER METER**
To the requirements of the network utility operator.

- 2.3 VALVES
Pressure reducing or limiting valve, filter, non-return valve, cold water expansion valve, pressure relief valve, pressure relief valve and isolating valves to [NZBC G12/AS1](#).
- 2.4 TEMPERING VALVE
Tempering valve to [NZS 4617](#) to [NZBC G12/AS1](#).
- 2.5 BACKFLOW PREVENTION DEVICES
Provide backflow prevention devices to [AS/NZS 2845.1](#) where it is possible for water or contaminants to backflow into potable water supply. Refer to [NZBC G12/AS1](#), 3.4 Backflow protection, and [NZBC G12/AS1](#), table 2, Selection of Backflow Prevention.
- 2.6 HEADER TANKS
Pre-formed black polyethylene or stainless steel tank, complete with access opening and lid and overflow tray.
- 2.7 INSULATION
Pre-formed pipe sections complete with bends and fittings, with fixing tape to the manufacturer's requirements.

Materials - hot water heating appliances

- 2.8 ELECTRIC HOT WATER CYLINDER, MAINS PRESSURE
To [NZS 4305](#), ceramic-coated steel thermal storage cylinder, insulated and complete with required fittings.
- 2.9 ELECTRIC HOT WATER CYLINDER, LOW PRESSURE
To [NZS 4305](#) and [NZS 4602](#) copper thermal storage cylinder, insulated and complete with pressure reducing valve and required fittings.
- 2.10 ELECTRIC HOT WATER CYLINDER, UNDER SINK, LOW PRESSURE
To [NZS 4305](#) and [NZS 4602](#) copper thermal storage cylinder, insulated and complete with required fittings.
- 2.11 ELECTRIC BOILING CYLINDER, WALL MOUNTED
To [NZS 4305](#) wall-mounted boiling water heater in pre-finished cabinet, complete with tap draw off.
- 2.12 GAS HOT WATER HEATER, STORAGE TYPE
Insulated cylinder to [NZS 4305](#) with an integral gas burner and flue.
- 2.13 GAS HOT WATER HEATER, CONTINUOUS FLOW TYPE
Continuous flow unit with an integral gas burner and flue to [NZS 4305](#).

Components

- 2.14 PIPE CLAMPS
aquatherm[®] proprietary pipe clamps and clips.
- 2.15 VALVES
aquatherm[®] proprietary valves and ball cocks as selected and required.

3. EXECUTION

Conditions

- 3.1 HANDLE AND STORE
Handle and store pipes, fittings and accessories to avoid damage. Store on site, under cover, out of direct sunlight, on a clean level area, stacked to eliminate movement and away from work in progress in accordance with the aquatherm[®] flexi technical manual.

- 3.2 **CORE HOLES AND SLEEVES**
Review location and fit core holes and sleeves as needed throughout the structure in conjunction with the boxing, reinforcing and placing of concrete. Strip core holes and make good after installation of pipework.
- 3.3 **FASTENING TECHNIQUE**
Fix pipework using aquatherm[®] proprietary pipe brackets, spacing in accordance with the aquatherm[®] flexi technical manual. Ensure brackets are set out as fixed or sliding points in accordance with the aquatherm[®] flexi technical manual.
- 3.4 **CONCEAL**
Conceal pipework within the fabric of the building unless detailed otherwise. Satin finish chrome plate exposed work, complete with matching ferrule at the surface penetration.
- 3.5 **IN CONCRETE INSTALLATION**
Install directly in concrete in accordance with aquatherm[®] flexi installation procedures.
- 3.6 **IN GROUND INSTALLATION**
Install to [AS/NZS 3500.5](#), clause 2.13.4 Under concrete slabs.
- 3.7 **THERMAL MOVEMENT**
Accommodate movement in pipes resulting from temperature change by the layout of the pipe runs, by expansion joints and by sleeving through penetrations. Install pipework in accordance with the aquatherm[®] flexi technical manual.
- 3.8 **PIPE SIZE**
Flow rates to each outlet to be no less than those given in [NZBC G12/AS1](#), table 3, Acceptable flow rates to sanitary fixtures, with pipe size as determined in [NZBC G12/AS1](#), table 4, Tempering valve and nominal pipe diameters and in accordance with the aquatherm[®] flexi technical manual.

Application - jointing

- 3.9 **AQUATHERM FLEXI POLYETHYLENE RT WATER SUPPLY**
Size the piping layout to eliminate loss of pressure at any point by simultaneous draw-off. Run pipes complete with all fittings, support and fixing, sliding sleeve joins and install to manufacturers specifications, all to [NZBC G12/AS1](#). Conceal pipework and pressure test before the wall linings are fixed.

Application - distribution systems

- 3.10 **WATER SUPPLY CONNECTION**
Arrange with the network utility operator for a connection to the water main and from there through a water meter and gate valve. Provide back flow prevention to [NZBC G12/AS1](#).
- 3.11 **COLD WATER INSTALLATION**
From connection point, size the runs and branches to deliver the acceptable flow rate to [NZBC G12/AS1](#), table 3, Acceptable flow rates to sanitary fixtures at each outlet. Allow for the expected concurrent use of adjoining fixtures. Lay out pipes in straight runs with support spacing to [NZBC G12/AS1](#), table 7, Water supply pipework support spacing firmly fixed and buffered to eliminate noise and hammer, with preformed tee-connection take-offs and branches, with bends to aquatherm[®] flexi requirements, complete with necessary valves and fittings.
- 3.12 **MAIN ISOLATING VALVE**
Install a proprietary isolating ball cock in an accessible position at the point of entry to the building.
- 3.13 **IN LINE FILTER**
Install an in line filter immediately adjacent to the isolating valve in an accessible position to allow for easy cleaning.

- 3.14 **HOT WATER PIPEWORK**
Use a take-off spigot to give separate branches to each fitting, lay out pipes with support spacing to [NZBC G12/AS1](#), table 7 Water supply pipework support spacing. Fix firmly and buffer to eliminate noise and hammer, with preformed tee-connection take-offs and branches, with bends to aquatherm[®] flexi requirements, complete with all necessary valves and fittings.
- 3.15 **INSULATION**
Lag all pipes with insulation to the manufacturer's requirements. Refer to SELECTIONS for type.
- Installation - hot water systems**
- 3.16 **HOT WATER CYLINDER INSTALLATION GENERALLY**
Install hot water cylinders complete to the manufacturer's requirements and to [NZBC G12/AS1](#), 6. 11, Water heater installation. Valve-vented systems to [NZS 4607](#).
- 3.17 **SEISMIC RESTRAINTS - GAS WATER HEATING APPLIANCES**
Gas appliances to be restrained to manufacturer's requirements, AS/NZS 5601.1 and [NZBC C/AS1-AS7](#), 7.2 Gas-burning Appliances.
- 3.18 **SEISMIC RESTRAINTS - NON-GAS WATER HEATING APPLIANCES**
Non-gas (electric, wet-back, solar etc) water heating appliances to be restrained to manufacturer's requirements and [NZBC G12/AS1](#), 6.11, Water Heater Installation.
- 3.19 **INSTALL HOT WATER PIPE INSULATION**
Insulate all hot water pipes to [NZBC H1/AS1](#), [AS/NZS 3500.5](#), 3.33 Water and Energy Efficiency, and to the insulation manufacturer's instructions. Cut insulation sections tight between timber framing and tight between the webs of steel studs.
- 3.20 **INSTALL ELECTRIC HOT WATER CYLINDERS AND BOILING CYLINDERS**
Install where shown complete with all the necessary fittings to the cylinder manufacturer's requirements and in accordance with [NZBC G12/AS1](#): 6.11. Valve-vented systems to [NZS 4607](#).
- 3.21 **INSTALL LOW PRESSURE UNDER-SINK HOT WATER CYLINDER**
Install hot water cylinders complete to the manufacturer's requirements and to [NZBC G12/AS1](#), 6.11 Water heater installation. Connect to sink tap.
- 3.22 **INSTALL WALL-MOUNTED BOILING CYLINDER**
Install to the cylinder manufacturer's stated requirements. Locate where shown.
- 3.23 **INSTALL GAS HOT WATER HEATER, STORAGE TYPE**
Install complete with the necessary fittings to the manufacturer's requirements and in accordance with [NZBC G12/AS1](#), 6. 11 Water heater installation. Install flue in accordance with the manufacturer's details and requirements and, AS/NZS 5601.1 (for internal or external appliances) or [NZBC G4/AS1](#) (internal appliances). Also refer to section 7221 GAS APPLIANCES for installation of gas appliances.
- 3.24 **INSTALL GAS HOT WATER HEATER, CONTINUOUS FLOW TYPE**
Install complete with the necessary fittings to the manufacturer's requirements and in accordance with [NZBC G12/AS1](#), 6. 11, Water heater installation. Install flue in accordance with the manufacturer's details and requirements and, AS/NZS 5601.1 (for internal or external appliances) or [NZBC G4/AS1](#) (internal appliances). Also refer to section 7221 GAS APPLIANCES for installation of gas appliances.
- 3.25 **INSTALL HOT WATER CYLINDER OVERFLOW TRAY**
Install drained overflow tray to hot water cylinder to [NZBC G12/AS1](#).
- 3.26 **INSTALL TEMPERING VALVE**
Install 1 metre minimum from outlet of hot water cylinder and to manufacturer's instructions. Install copper pipework for 1 metre minimum downstream of tempering valve prior to connection of non-metallic pipework.

Installation - tapware

- 3.27 **INSTALLING APPLIANCE ISOLATING VALVES - CONCEALED**
Install isolating valves for appliances in accessible positions. Locate in adjacent cupboards and position to allow for easy connection and operation.
- 3.28 **INSTALLING TAPWARE**
Install to manufacturer's requirements.
- 3.29 **INSTALLING BACKFLOW PREVENTION DEVICE**
Provide and install backflow prevention device as near as practicable to the potential source of contamination, and in an accessible position for maintenance and testing to AS 2845.3 or [NZ Backflow Testing Standard](#).

Completion

- 3.30 **FLUSH OUT PIPEWORK**
Flush out pipework. Remove all filters, clean and reassemble.
- 3.31 **REPLACE**
Replace damaged or marked elements.
- 3.32 **LEAVE**
Leave work to the standard required by following procedures.
- 3.33 **REMOVE**
Remove debris, unused materials and elements from the site.

4. SELECTIONS

For further details on selections go to www.aquatherm.co.nz.
Substitutions are not permitted to the following, unless stated otherwise.

Water main

- 4.1 **AQUATHERM FLEXI POLYBUTYLENE WATER MAIN**
Size: ~mm outside diameter aquatherm®flexi

Pipework

- 4.2 **AQUATHERM FLEXI PIPE WORK**
Branch off take: 16mm outside diameter aquatherm® flexi
Branch main: 20mm outside diameter aquatherm® flexi
Main: 25mm outside diameter aquatherm® green pipe

- 4.3 **HOT WATER RING MAIN AQUATHERM GREEN PIPE**
Pipework: ~mm outside diameter aquatherm® green pipe
Insulation: ~
Pump: ~

- 4.4 **INSULATION**
Brand: ~
Material: ~
Wall thickness: ~
Finish: ~

Hot-water systems

- 4.5 **ELECTRIC HOT WATER CYLINDER, MAINS PRESSURE**
Brand: ~
Model/size: ~

- 4.6 ELECTRIC HOT WATER CYLINDER, LOW PRESSURE
Brand: ~
Model/size: ~
- 4.7 ELECTRIC HOT WATER CYLINDER, UNDER-SINK, LOW PRESSURE
Brand: ~
Model/size: ~
- 4.8 ELECTRIC BOILING CYLINDER, WALL MOUNTED
Brand: ~
Capacity: ~litres
- 4.9 GAS HOT WATER HEATER, STORAGE TYPE
Brand: ~
Model number and capacity: ~
Gas type: ~
- 4.10 GAS HOT WATER HEATER, CONTINUOUS FLOW TYPE
Brand: ~
Model size: ~
Remote controller: ~
Gas type: ~
- Valves and accessories**
- 4.11 MAIN ISOLATING VALVE
Location: ~
Brand/type: aquatherm® ball valve
- 4.12 IN LINE FILTER
Location: ~
Brand/type: ~
- 4.13 FLOOR/ZONE ISOLATING VALVES
Location: ~
Brand/type: aquatherm® flexi ball valve
- 4.14 APPLIANCE ISOLATING VALVES - CONCEALED
Appliance: ~
Brand/type: aquatherm® flexi ball valve or concealed valves to suit application
- 4.15 APPLIANCE ISOLATING VALVES - EXPOSED
Appliance: Washing machine
Brand/type: Refer to tapware selections
- 4.16 TEMPERING VALVE
Location: ~
Brand/type: ~