

Fire hydrant and fire hose reel services

Plumbing Advisory Note

Revised March 2019

How to book a fire service installation audit

All new fire services and alterations to existing fire service installations must be booked with the OTR and are subject to auditing.

Book on line at www.plumbbooking.sa.gov.au or call the Plumbing Booking line **1300 884 055** between 9.00am and 3.00pm, Monday to Friday.

Booking requirements

At the time of booking the audit you are required to provide the following:

- property owner's name
- property address
- contractor name and contractor's licence number
- contact telephone number
- on-site contact name and telephone number
- date and time of requested site audit
- electronic Certificate of Compliance (eCoC) number.

The fire service test

AS 2419.1 Clause 10.2.2 Hydrostatic test requires a 1700 kPa test for two hour duration.

All work must be tested at a pressure of 1700 kPa for a period of two hours. After the pressure test, the pressure in the internal system is to be released through a hydrant or fire hose reel and the pressure gauge must return to zero. If the gauge does not return to zero, the test will be considered to have failed and will need to be re-booked.

Legislative requirements

The *National Construction Code Series Volume Three, Plumbing Code of Australia (PCA)* – Part B specifies performance requirements related to installing fire-fighting water services.

Fire-fighting water installations that comply with the AS/NZS 3500.1 Water Services and AS2419.1 are the deemed to satisfy the performance requirements of the PCA.

Hydrostatic pressure testing procedure for polyolefin pipes (LDPE, MDPE, HDPE)

Polyolefin pipes can change dimensions during testing to 1700 kPa due to their elastic nature. Expansion of the pipe may mean it's not possible to secure a fixed pressure gauge reading without using a unique testing procedure. As the pipe expands, the pressure will reduce and not meet the requirements of a firm 1700 kPa reading. The Office of the Technical Regulator (OTR) will only accept a steady pressure gauge reading of 1700 kPa.

To test polyolefin pipework and achieve compliant test results, a special procedure needs to be used. The supplier/manufacturer should be contacted and asked for their recommended testing procedure so as to meet the required test regime, without damaging the structural integrity of the pipe.

One successful testing process offered commercially is referred to as the 'Rebound Test'. The Master Plumbers Association can be contacted on 8292 4000 for further information on rebound testing.

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Fire hydrant installation test pressure limitations for Type A and Type B copper tubes

AS 1432 Copper tubes for plumbing, gas fitting and drainage applications

Appendix C of AS1432, table C2, outlines the pressure testing (PT) limitations in kPa that Type A and B copper tubes can be subjected to. Type A copper tubes can be selected for use in sizes up to and including DN 150. Type B copper tubes can be selected for use in sizes up to and including DN 100.

Turning off a fire service or to recharge a fire service

To have the Water Entities fire service valve turned off or to recharge a fire service, call SA Water, Customer Service Centre on 1300 883 121.

Fire service documentation requirements

The plumbing contractor must provide the OTR with the following information within seven days of completing the fire services installation:

- copy of the fire service installation report
- electronic Certificate of Compliance (eCoC)
- backflow prevention device commission, inspection and maintenance report
- block plan of the installation.

This information must be emailed to otr.plumbregulator@sa.gov.au

Backflow prevention

Backflow prevention devices must be installed and commissioned by an appropriately licensed plumber.

Some water entities (e.g. SA Water) may require a higher level of backflow prevention for installations that pump directly from a water supply.

Backflow prevention for fire hydrant systems

A WaterMarked single check valve – testable device (SCVT) must be installed as close as practicable to the property boundary and adjacent to the point of connection with the water entity's (SA Water) supply.

If the H pattern booster assembly is located adjacent to the point of connection, an SCVT, together with a WaterMarked, gear activated, resilient-seated isolating valve installed either side of the SCVT, shall be installed within the H pattern of the booster assembly. There shall be no other branches to other connections prior to the SCVT.

If the H pattern booster assembly is not located adjacent to the point of connection:

- a WaterMarked SCVT must be installed at the point of connection, together with a WaterMarked, gear activated, resilient-seated isolating valve installed either side of the SCVT.
- where a WaterMarked SCVT is installed at the point of connection, a certified full flow non-return valve shall be installed in the booster pattern. The associated isolating valve shall be WaterMarked.

Backflow prevention for Fire Hose Reel (FHR) installations

The following water service supplying FHR backflow prevention installation requirements have been determined by risk assessment.

FHR branched from	Backflow prevention device		Individual backflow prevention device	
	Location	Type	Internal	External / undercroft
Drinking water service	Containment	Testable Double Check Valve (DCV)	Non-testable Dual Check Valve (Dual-CV)	Testable Double Check Valve (DCV)
	Zone (dedicated line to FHR)	Testable Double Check Valve (DCV)	None	None
Dedicated fire hydrant service	Containment	Testable Single Check Valve (SCVT)	None	Testable Double Check Valve (DCV)
	Zone	Testable Double Check Valve (DCV)	None	None
	Containment	Testable Double Check Valve (DCV)	None	None

FHR Isolating valves

The following applies for a FHR where supplied from a metered drinking water supply:

Any valve that can prevent flow of water to the hose reel shall be secured and padlocked in the open position. It shall have a tag attached which is corrosion-resistant and durable. The tag must have the text shown in the diagram below in upper case lettering, at least 8 mm tall.

FHR supplied by a connection to a fire hydrant main

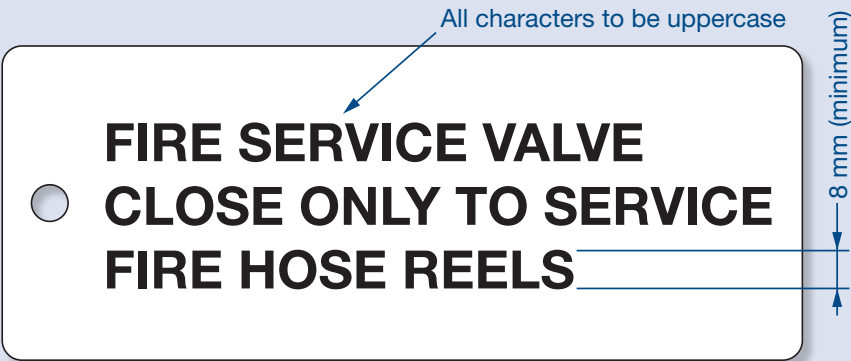
Any isolating valve shall be located in a fire-isolated stairway, fire-isolated passage or a fire isolated ramp, or outside the building.

FHR main isolating valves

A FHR shall have an isolating valve fitted at the point of connection in accordance with the requirements of the BCA if it:

- exceeds DN 25
- services two or more fire hose reels and is connected to a fire hydrant system.

Each fire hose reel main isolating valve shall be secured in the open position by a padlocked metal strap (or device) and have an engraved, non-ferrous metal tag attached. The tag must have the text shown in the diagram below in upper case lettering, at least 8 mm tall.



Required text for FHRs to meet the requirements of the BCA.

Materials used in fire service installations

Galvanised steel pipe must not be used upstream of any backflow prevention device (indicated by the blue lines in Figures 1, 2 and 3).

When selecting materials used in fire service installations, plumbers should consider:

- if the material will be above or below ground
- the requirements for protecting specific materials
- the minimum pressure rating for PVC-U and polyethylene piping (must be a minimum of PN16).

Material	Above-ground use	Below-ground use
Cast iron fittings	Yes	Yes
Copper tubes	Yes	Yes
Ductile iron pipes and fittings	Yes	Yes
Plastic pipe and fittings	No	Yes
Stainless steel pipes and fittings	Yes	Yes
Steel pipes and fittings – galvanised	Yes – downstream of the SCVT device	Yes – downstream of the SCVT device and no more than 1.5m in length as part of the hydrant riser
Wrought steel fittings	Yes	No

General installation requirements

Figure 1

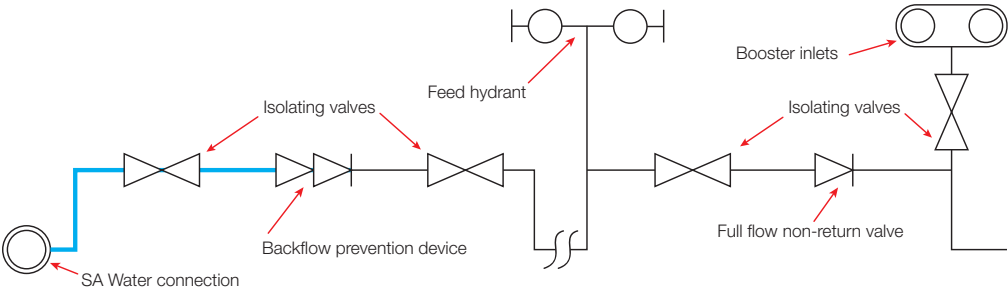


Figure 2

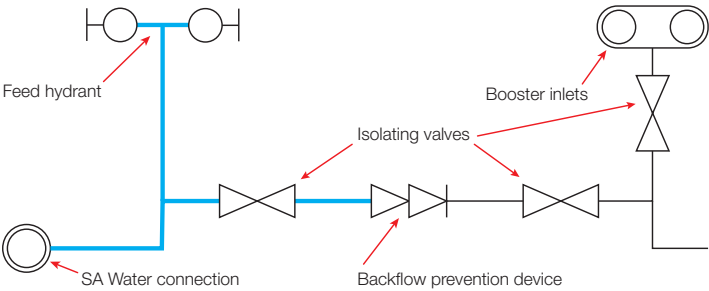
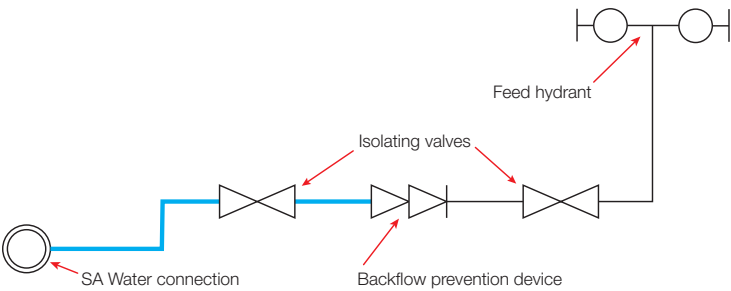


Figure 3



Location options for backflow prevention device

The SCVT assembly may be installed either:

- separately i.e. prior to the feed hydrant/booster installation (Figure 1)
- within the 'H' pattern of the booster (Figure 2)
- on the supply to stand-alone feed hydrant (Figure 3).

Galvanised pipe must not be used upstream of the SCVT assembly (indicated by the blue lines in figures 1, 2, and 3).

Thrust blocks and anchors

Thrust blocks and anchors shall be installed in systems with unrestrained joints. Installations shall not be charged with water until all thrust blocks have been allowed sufficient time to gain their designed strength.

External and Internal pipework

Above ground pipework in fire hydrant systems must be protected from the effects of fire.

For example, where exposed copper pipework is installed within a non-sprinkler protected building it shall be protected by fire resisting construction of not less than -/60/60 fire resistant level (FRL) or installed in a fire isolated-stair or fire-resisting shaft or located above a ceiling system that achieves a resistance to the incipient spread of fire for a period of not less than 60 minutes.

Above-ground pipes

Plastic pipes and pipe fittings shall not be used in above ground installations.

Below-ground pipes

The combined maximum length of galvanized pipe and fittings for individual hydrant risers not exceed 1.5 m in length, and must be double wrapped with a petrolatum tape in accordance with AS 2419.1 Clause 8.6.5.3.

Hydrant mains tapping

Fire hose reels that are reticulated from a fire hydrant system shall have permanent signage for the isolation valve. The clause also specifies the location of the valve.

This enables the system to be easily shut off in the event that a fire has damaged internal hose reel pipework, while maintaining available system pressure in the fire hydrant system to meet the operational needs of the Metropolitan Fire Service.

Bushfire zones

‘In Australia, in areas designated as bushfire-prone areas by an authority having jurisdiction, all exposed piping shall be metal. Pipes of other materials shall be buried with a minimum depth of cover of 300 mm, measured from the proposed finished surface level.

Note: The NCC includes requirements for water supply piping in bushfire zones.’

Polyethylene extruded plastic coating and tape

For in ground hydrant lines that are polyethylene coated, the extruded sleeve of tape shall be of high density polyethylene plastic, applied over the hot dipped galvanised pipe.

‘Loose polyethylene sleeving shall not be used as in-ground corrosion protection for stainless steel and galvanized steel pipe and fittings.’

Petrolatum tape coating

Galvanized steel risers and copper pipes installed in the ground must be double-wrapped with petrolatum tape.

- The second wrapping must overlap by 50% and be wrapped in the opposite direction of the first wrapping.
- The coating must be overwrapped with a self-adhesive polyethylene tape.

Depth of cover

Minimum depth of cover for buried pipes should comply with Table 5.9.

Table 5.9 – Minimum depth of cover for buried pipes

Loading conditions	Minimum cover
Under slabs and footings (concrete)	75 mm
Not subject to vehicular loading (excluding fire services)	300 mm
Fire services not subject to vehicular loading	600 mm
Subject to vehicular loading:	
(a) no carriageway	450 mm
(b) sealed carriageway	600 mm
(c) unsealed carriageway	750 mm
Pipes in embankments or subject to construction equipment loads	750 mm

Contact the Office of the Technical Regulator for more information

Online sa.gov.au/otr

Email otr.plumbregulator@sa.gov.au

Phone 1300 760 311



**Government of
South Australia**