



## Fire brigade booster connection with inlet insert

### 1 Purpose

This technical information sheet details Fire and Rescue NSW (FRNSW) requirements for any new fire brigade booster connection which is fitted with an inlet insert.

### 2 Scope

This technical information sheet details:

- (a) the standards applicable to fire brigade booster connections
- (b) the difference between an 'inlet insert' and a 'single booster'
- (c) the design requirements for inlet inserts fitted to the fire brigade booster connection
- (d) the requirements for the fire brigade booster connection to demonstrate compliance.

### 3 Application

This document applies to any fire brigade booster connection installed on any new or upgraded fire hydrant or fire sprinkler system in any building, facility or site within NSW.

This document is to be used during the design and installation of any fire brigade booster connection which incorporates an inlet insert.

This document applies to any fire brigade booster connection that is being tested to demonstrate compliance to the required standard.

This document is intended to be used by fire protection installers, hydraulic consultants and engineers, certifiers, local government authorities and regulatory authorities.

### 4 Regulations and Standards

Clause E1.3 of the *NCC*<sup>1</sup> requires a fire hydrant system serving a building to be installed in accordance with *Australian Standard AS 2419.1–2005*<sup>2</sup>.

Specification E1.5 of the *NCC* may require the automatic fire sprinkler system to comply with *AS 2118.1–2017*<sup>3</sup> or *AS 2118.6–2012*<sup>4</sup>.

Section 4.14 of *AS 2118.1–2017* requires the automatic fire sprinkler system to be fitted with a fire brigade booster assembly that conforms to the requirements of *AS 2419.1–2005*.

Section 2.9 of *AS 2118.6–2012* requires the automatic fire sprinkler system to be fitted with a fire brigade booster assembly in accordance with *AS 2419.1–2005*.

Clause 7.1 of *AS 2419.1–2005* specifies that the fire brigade booster assembly shall conform to the requirements of *AS 2419.3–2012*<sup>5</sup>.

Section 3.3(e) of *AS 2118.6–2012* also states that the fire brigade booster assembly is to comply with *AS 2419.3–2012*.

<sup>1</sup> National Construction Code Series Volume One, Building Code of Australia Class 2 to Class 9 Buildings

<sup>2</sup> AS 2419.1–2005 Fire hydrant installations; Part 1: System design, installation and commissioning

<sup>3</sup> AS 2118.1–2017 Automatic fire sprinkler systems; Part 1: General systems

<sup>4</sup> AS 2118.6–2012 Automatic fire sprinkler systems; Part 6: Combined sprinkler & hydrant systems in multistorey buildings

<sup>5</sup> AS 2419.3–2012 Fire hydrant installations; Part 3: Fire brigade booster connections

## 5 Fire brigade booster connection

### 5.1 General

5.1.1 The fire brigade booster connection may be manufactured as being either cast-bodied or pipe-bodied design (see Figure 1 below).

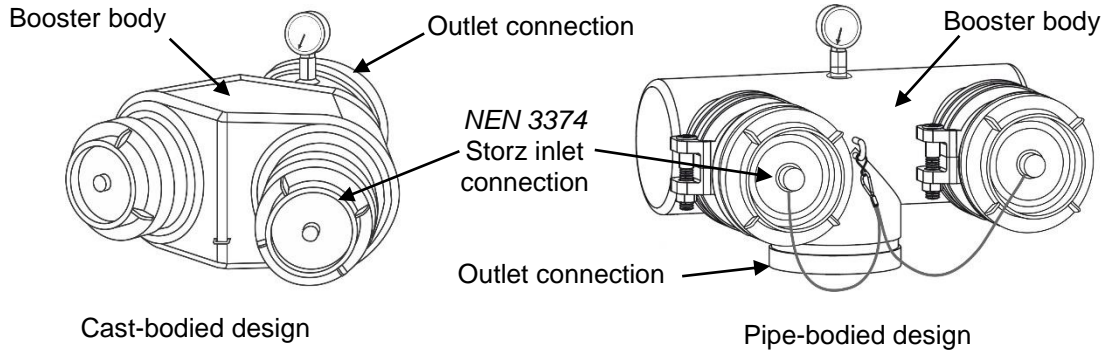


Figure 1 Example of cast-bodied and pipe-bodied fire brigade booster connection

5.1.2 The fire brigade booster connection is to be designed and type tested for one of the following allowable pressure ratings (e.g. Pressure Nominal (PN) rating):

PN	Rated operating pressure (kPa)	Maximum operating pressure (kPa)	Maximum test pressure (kPa)	Booster body test pressure (kPa)
14	1400	1750	2100	2800
21	2100	2625	3150	4200
35	3500	4375	5250	7000

Table 1 Allowable pressures of fire brigade booster connections

5.1.3 The fire brigade booster body is to have an outlet connection which is screwed, flanged, roll grooved or shoulder joint coupling and be DN 80, DN 100, DN 150 or DN 200 for a design comprising one, two, four and six inlets respectively.

5.1.4 The fire brigade booster is to have inlet connections which are fitted with *NEN 3374<sup>6</sup>* Storz ‘permanent pressure coupling’ (refer to *FRNSW compatible Storz hose connections*).

**Note:** *NEN 3374* Storz has 2½ inch British standard pipe (BSP) parallel thread.

5.1.5 Clause 3.2(h) of *AS 2419.3–2012* requires inlet connections to be forward facing or offset horizontally at maximum 22.5° from forward facing (see Figure 2 below).

**Note:** Inlet connections cannot be on a vertical pipe booster body and be horizontally offset more than 45° apart from each other (e.g. perpendicular).

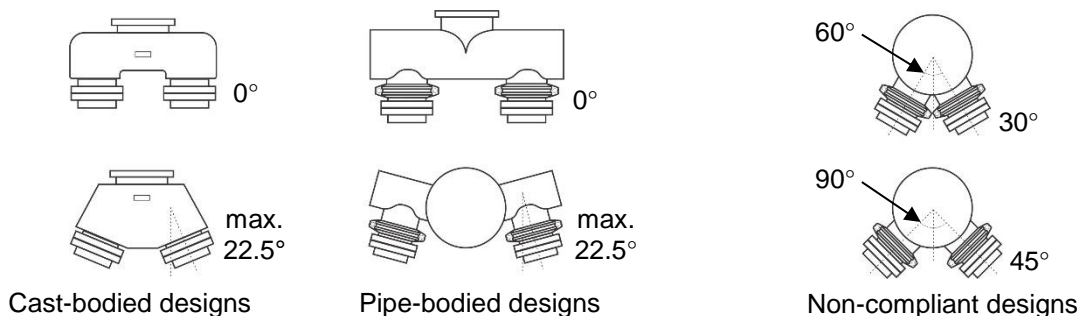


Figure 2 Example of compliant and non-compliant inlet connections

<sup>6</sup> NEN 3374:1971 Fire fighting equipment – Fire hose couplings and ancillary equipment

## 5.2 Inlet insert

- 5.2.1 An inlet insert is defined within *AS 2419.3–2012* as a sub-assembly comprising a spring-operated non-return valve, a fire hose coupling and a roll grooved, screwed or flanged connection for fitting to a booster body (see Figure 3 below).

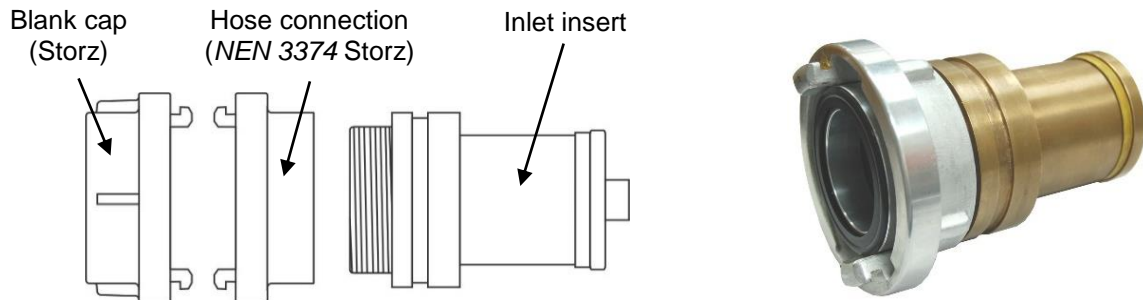


Figure 3 Typical inlet insert with Storz hose connection

- 5.2.2 The inlet insert is fitted into the booster body, whether it is a cast-bodied or pipe-bodied design, to form the complete fire brigade booster connection assembly.

**Note:** An inlet insert may be used in a single cast-bodied booster. This single booster is uncommon due to *AS 2419.1–2005* requiring a minimum of two inlet connections.

- 5.2.3 The inlet insert is to comply with all relevant requirements from *AS 2419.3–2012* for an inlet connection (e.g. correct materials, valve pressure, orifice diameter, flow and pressure).

**Note:** An *NEN 3374* Storz hose connection is to be fitted to the inlet insert.

- 5.2.4 When correctly fitted, the inlet insert has a spring-operated jumper valve which should fully open within the booster body to allow maximum flow of water through the inlet connection.

- 5.2.5 When used on a pipe-bodied fire brigade booster connection, the inlet insert is fitted into a short length of pipe (sleeve) connected to the booster body.

## 6 Pipe-bodied fire brigade booster connection

### 6.1 Pre-fabricated design

- 6.1.1 A pipe-bodied fire brigade booster connection is to be pre-fabricated to a design specific for the PN rating which is to comprise the booster body pipework, inlet connections (including inlet inserts) and an outlet connection.

- 6.1.2 Each specific design of pre-fabricated pipe-bodied fire brigade booster connection is to be production and type tested for compliance (refer to section 7).

**Note:** The pipe-bodied fire brigade booster connection cannot be fabricated bespoke without being independently type tested.

- 6.1.3 The pre-fabricated pipe-bodied design is to ensure inlet inserts are fitted to achieve maximum flow and that inlet connections are correctly aligned (refer to clause 5.1.5).

### 6.2 Installation issues affecting flow

- 6.2.1 Inlet inserts have a spring-loaded jumper valve which need to fully open and have enough clearance to provide the required minimum pressure and flow through the inlet connection.

- 6.2.2 When the pipe sleeve length is incorrect (i.e. too short or long), the jumper valve may not have adequate clearance around the pipe wall when open, or the jumper valve may be obstructed from fully opening by the booster body manifold piping (see Figure 4).

**Note:** If the fire brigade booster connection is manufactured to the type-tested compliant design, then this issue should not arise with a production version.

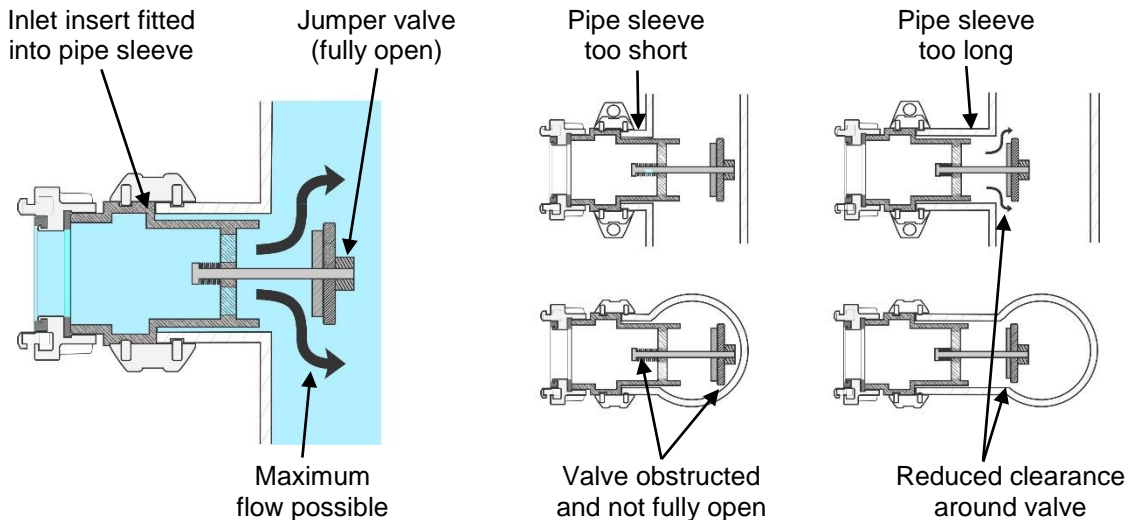


Figure 4 Inlet insert installation issues (top and cross-section views)

## 7 Compliance testing

- 7.1 The design of the fire brigade booster connection is to be independently certified by type testing done in accordance with Appendix D of AS 2419.3-2012.
- 7.2 The booster body, whether cast-bodied or pipe-bodied, is to be independently certified to the maximum booster body test pressure given in Table D1 of AS 2419.3-2012 (refer also to clause 5.1.2).
- 7.3 Independent certification by type testing is to be undertaken at any change of material, component or design.
- Note:** A pipe-bodied design fire brigade booster connection is to be pre-fabricated to the same detailed design (i.e. specifications and drawings) as independently certified.
- 7.4 The independently certified fire brigade booster connection is to be permanently marked with the following:
- (a) the certification licence number (i.e. from the testing authority)
  - (b) the standard to which it complies (i.e. AS 2419.3-2012)
  - (c) the PN rating (e.g. PN 14, 21 or 35)
  - (d) the manufacturer's name or trademark.
- Note:** Other markings may also be required as per AS 2419.3-2012.
- 7.5 All fire brigade booster connections are to be production tested in accordance with Appendix E of AS 2419.3-2012.
- Note:** Production tests are to verify the maximum test pressure of the booster assembly and inlet non-return valve seat test.
- 7.6 When the fire brigade booster connection is installed, the completed fire hydrant system is to be tested and commissioned in accordance with Section 10 of AS 2419.1-2005.
- Note:** Fire hydrant system commissioning tests do not satisfy the test requirements for fire brigade booster connection compliance as required by AS 2419.3-2012.

## 8 Contact us

For further information contact the Fire Safety Branch on (02) 9742 7434 or email [firesafety@fire.nsw.gov.au](mailto:firesafety@fire.nsw.gov.au).