



POSITION STATEMENT SUMMARY

FRNSW pump performance for high-rise buildings

Position

Effective 5 December 2024, the following is a position of Fire and Rescue NSW (FRNSW):

FRNSW requires any fire brigade booster assembly installed on a fire hydrant system serving a high-rise building to be commensurate with the design and its required fire brigade boost inlet pressure.

AS 2419.1–2005 Fire hydrant systems

Where a building has an effective height of more than 50 m, Clause 7.7 of the Standard requires a ‘fire brigade relay pump’ to be installed for the pressure zone/s above 50 m. For pressure zone/s located below 50 m height, the minimum boost inlet pressure applied by the fire brigade pumping appliance will be that required to provide 700 kPa to the applicable fire floor.

Note: The boost pressure signage for parts of the building below 50 m should identify the boost pressure value that provides 700 kPa at the hydraulically most disadvantaged fire hydrant outlet in the upper most pressure zone that is below 50 m.

For pressure zone/s above 50 m, the fire hydrant system pipework should be designed on the premise that the FRNSW pumping appliance will provide 950 kPa to the inlets of the fire brigade booster connection that is supplying the fixed on-site fire brigade relay pump. This input pressure should be used to size the relay pump so that it can deliver not less than 700 kPa to the hydraulically most disadvantaged fire hydrant outlet in each pressure zone above 50 m.

Note: The boost pressure signage for parts of the building above 50 m should identify a maximum boost pressure value of 950 kPa for input to the relay pump, which approximates 1,000 kPa output from a standard FRNSW pumper, less hose friction losses.

AS 2419.1:2021 Fire hydrant systems

Where a building has an effective height of not more than 135 m, the fire hydrant system (including pipework) is to be designed so that the pressure provided at the inlets of the fire brigade booster connection by a FRNSW pumping appliance will provide not less than 700 kPa at the hydraulically most disadvantaged fire hydrant outlet in each pressure zone. However, when the fire hydrant system is commissioned, the pressures detailed in Table 12.4.3 of the Standard may be applied.

Where a building has an effective height of more than 135 m, a performance solution must be developed in collaboration with FRNSW to ensure that the fire hydrant system facilitates the needs of the fire brigade.

Note: A PN 35 rated fire brigade booster connection with PN 40 high pressure Storz fittings is required for the high-rise ring main, particularly for redundancy during building construction.

Reference must be made to the FRNSW website to ensure this position is current at the time of use, and this position has not been superseded or revoked.

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Summary

This position statement supersedes the previous position '*FRNSW pump performance for high rise buildings*' last updated on 21 October 2021. The position has been revised to provide greater clarity and additional informative detail, particularly in respect to the relevant applicable Standard.

The position reminds building proponents that the fire brigade booster assembly is designed for a required boost inlet pressure, which differs depending on the building's effective height, and the corresponding pressure zones provided in the fire hydrant system design. In an AS 2419.1–2005 fire hydrant system, the required boost inlet pressure for pressure zones below 50 m is that required to provide 700 kPa at the fire floor in the corresponding zone.

Informative commentary notes that the maximum boost pressure indicated on signage for this lowermost pressure zone is that required to provide 700 kPa at the most disadvantage hydrant in the corresponding zone. This maximum boost pressure is used by firefighters to calculate actual boost pressure required on the fire floor.

The position identifies that in an AS 2419.1–2005 fire hydrant system, the upper pressure zone/s are boosted via an on-site fire brigade relay pump, and that FRNSW will provide 950 kPa into the corresponding fire brigade booster connection. Hydraulic designers can use this input to specify the required pump duty of the relay pump/s to achieve 700 kPa at the hydraulically most disadvantaged fire hydrant.

Informative commentary notes that the 950 kPa input into the fire brigade booster connection equates to 1,000 kPa output on the pumping appliance, less friction losses between the pumper and booster connection.

The position clarifies that for an AS 2419.1:2021 fire hydrant system in a building not more than 135 m, the boost inlet pressure is that required to provide 700 kPa at the hydraulically most disadvantaged fire hydrant outlet in each pressure zone. However, the input pressures detailed in Table 12.4.3 of AS 2419.1:2021 may be used during commissioning of that fire hydrant system.

The position reiterates that buildings having an effective height exceeding 135 m are outside the scope of AS 2419.1:2021 and require a performance solution be developed in consultation with FRNSW. However, informative commentary notes that for such buildings any ring main serving pressure zones above 135 m require a suitably rated fire brigade booster connection with high pressure Storz fittings, particularly for redundancy during construction.

This position statement has been authorised for release by Chief Superintendent Fire Safety, FRNSW.

Contact us

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