



DFES Built Environment Branch - Technical Note 07/11

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DFES Boosting Pressure - Determining the Duty of a Booster Relay Pump

Objective

The objective of this Technical Note is to clarify DFES's position in respect of the boost pressure that DFES will provide during boosting operations in a multiple pressure zoned hydrant system incorporating a relay booster pump in the system design. This Technical Note also seeks to standardise and simplify DFES boosting operations in buildings where relay booster pumps are installed.

In the absence of a prescribed intake pressure to relay booster pumps in Australian Standard AS2419.1 Fire Hydrant Installations Part 1: System design, installation and commissioning, and Australian Standard AS2118.6 Automatic fire sprinkler systems Part 6: Combined sprinkler and hydrant, system designers frequently consult with the DFES Built Environment Branch to determine the duty or performance required of a booster relay pump required in accordance with AS2419.1.

In particular, designers are seeking advice on the pressure that will be applied by a DFES pumping appliance (measured at the booster inlets), and subsequently delivered to the relay booster pump during boosting operations. This pressure is then used by designers to specify a booster relay pump that will achieve not less than 700 kPa (whilst flowing in accordance with AS2419.1 Tables 2.1 and 2.3) at the hydraulically most disadvantaged hydrant outlet within the boosted pressure zone.

Assumed Boost Pressure

For the purposes of determining the duty of a single booster relay pump, or the hydraulically most advantaged booster relay pump where a series of such pumps are installed, designers are requested to assume that DFES will provide a boost pressure of **1000kPa** (measured at the booster inlets) when boosting a hydrant system, or combined sprinkler hydrant system containing a relay booster pump.

Rationale

The 1000 kPa boost pressure is;

- Within the safe working limits of the fire hoses used to connect the DFES appliance to the booster connection.
- Generally achievable by all DFES pumping appliances that are in service in geographical areas where relay booster pumps are likely to be installed, i.e. the Perth metropolitan area, including Mandurah, and the major rural centres of Geraldton, Kalgoorlie, Bunbury and Albany.
- Commensurate with AS2118.1 Clause 4.6 “Pressure Considerations” which limits the pressure at any sprinkler head in the system to 1MPa (1000 kPa).

Notes to above: There may be instances, albeit very rare, where a relay booster pump is required in a building not within the geographical areas described above. In such instances, system designers should continue to consult with the DFES Built Environment Branch when determining the duty of a relay booster pump.

The 1000kPa DFES boost pressure is only applicable when considering boosting to a system having a required booster relay pump. All other boosting scenarios will require a boost pressure that is determined through DFES testing or through hydraulic calculation in situations where DFES testing is not possible.

Combined Flow Rates of Hydrant and Sprinkler System

The relay booster pump is to be capable of meeting the required performance with the sprinkler system operating simultaneously over the design area of operation. This consideration is based on the realistic likelihood that the sprinkler system will be flowing in the event of a fire that requires the hydrant system to be utilised to achieve extinguishment.

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Should the information provided in this guideline require further clarification, please contact DFES Built Environment Branch via email beadmin@dfes.wa.gov.au.

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