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SOUTH AUSTRALIAN FIRE AUTHORITIES

Community Safety Department

BUILT ENVIRONS SECTION POLICY NO. 006

Control & Indication for Diesel & Electric Fire Pumps

BUILT ENVIRONS SECTION POLICY 06: CONTROL & INDICATION FOR DIESEL & ELECTRIC FIRE PUMPS

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6. Diesel Exhaust	added
7.	test/maintenance regimes updated

**BUILT ENVIRONS SECTION POLICY 06:
CONTROL & INDICATION FOR DIESEL & ELECTRIC FIRE PUMPS**

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GLOSSARY

AS	Australian Standard
LED	Light emitting diode
FIP	Fire Indicator Panel

REFERENCED DOCUMENTS

The following Australian Standards are referred to in this Schedule:

AS 1851	Australian Standard 1851 – <i>‘Maintenance of fire protection systems and equipment’</i> .
AS 2118	Australian Standard 2118 - <i>‘Automatic fire sprinkler systems’</i> .
AS 2419	Australian Standard 2419 - <i>‘Fire hydrant installations’</i> .
AS 2941	Australian Standard 2941 - <i>‘Fixed fire protection installations – Pumpset systems’</i> .
NFPA 20	National Fire Protection Association 20 – <i>“Standard for the Installation of Stationary Pumps for Fire Protection”</i>
FM 3-7	Factory Mutual Global, Data Sheet 3-7 <i>“Fire Protection Pumps”</i>

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1. GENERAL

This policy document applies to the control and indication of diesel and electric fire pumps for hydrant, sprinkler and other systems such as foam, spray and deluge systems.

It is expected that the fire pump set installation shall be in accordance with the current version of AS2941 and in some instances NFPA20 or FM Global Data Sheet 3-7 may be adopted to suit specific installation requirements.

For buildings without a fire indicator panel (FIP), pump control and indication must be local within the pump room.

Where the fire pump set is located remote from the building's main FIP, remote pump control and indication shall be provided at the main FIP.

This requirement may be discussed with this Department to determine applicability.

2. BASIC REQUIREMENTS – REMOTE PUMP CONTROLS

Where remote fire pump control and indication facilities are required, they shall be configured as below:

- a) A rotary “auto-off-on” key switch must be provided, one per pump, located within the FIP. Keys to such switches must only be removable in the auto position. The door to the FIP must be physically prevented from closing when the key is in any such switch.
- b) The following indication lamps (LED's) must be grouped adjacent to each switch in such a way that it is obvious to the operator as to which switch the indication lights refer to :
 - i) ON - red to illuminate when the pump is running
 - ii) OFF - green to illuminate when the pump is off
 - iii) LOCAL CONTROL - amber - to illuminate when the pump can only be controlled from the pump room.
- c) The individual fire pump controls must be clearly identified via permanent labelling.

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3. EMERGENCY START CONTROLS

The following emergency start controls must be located within the pump room as follows:

The following controls must be mounted on the engine driving the pump.

- a) A red knob rotary 3 position switch within a spring closing hinged hood, labelled as follows :
 - i) left position - AUTO
 - ii) mid position - LOCAL
 - iii) right position - START

The start position must be maintained against a spring loading, which must automatically return the switch to local once the knob is released.

The hinged hood must be equal to a Clipsal 75 mm x 75 mm external weatherproof box, with an engraved label, 10 mm high upper case white lettering on a red background "EMERGENCY START".

- b) Diesel pump - Unless a manual means of stopping the diesel engine is provide, then an additional engine stop control must be located adjacent to the "emergency start" enclosure.
 - i) a red push button labelled – STOP
- c) Electric pump - Stop control must be located adjacent to the "emergency start" enclosure:
 - i) a red push button labelled - STOP

4. CONTROL LOGIC

- a) Under normal conditions, all switches will be in the "auto" position.
- b) Depressurisation of the system must result in initiation of the of the automatic control start of the electric pump via a pressure switch. Further depressurisation of the system must result in initiation of the automatic control start of the diesel pump via a pressure switch.

Pump run/stop lamps located in the FIP must be initiated via a pressure switch located in each pump discharge so that operation will only result from an increase in pressure due to correct operation of the pump impeller.

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- c) Whilst the emergency start switches in the pump room are in the "auto" position, "on", "off" and "auto" control of the pumps must be possible only from the FIP and installed pressure switches. No other switches must be introduced into the control train logic
- d) If an emergency start switch is operated in the pump room, the amber "local control" LED must illuminate in the FIP and the adjacent FIP key switch serving that pump must be rendered inoperative.
- e) The above local control indication must be interlocked with the local audible alarm, which must be muted whilst the door to the FIP is in the OPEN position.

5. ALARM INDICATION

Notwithstanding the requirements of AS 2118, or AS 2149, the following alarms must provide a visual and audible warning within the pump room AND sound a bell above the entry door to the pump room.

- (a) Pump isolated at FIP;
- (b) Pump on "local" control;
- (c) Pump RUN;
- (d) Loss of power to battery charger;
- (e) Loss of A/C mains; and,
where such additional alarms are installed
- (f) Low fuel;
- (g) Low fire water storage tank water level; and
and
- (h) As agreed by the MFS.

Except for the "pump isolated at FIP", "local control" or "RUNn" alarm functions, any one of the above mentioned alarms must illuminate a flashing amber LED on the FIP, which must be labelled "PUMP ROOM FAULT ALARM".

The alarm must be integrated with the audible alarm at the FIP so that this alarm function will operate irrespective to FIP door open/close position.

6. DIESEL EXHAUST LAGGING

Diesel exhaust manifolds and exhaust pipework and mufflers shall be suitably lagged with "fit for purpose" thermally protective material to reduce the likelihood of injury to any personnel operating within the vicinity of a compression ignition pump driver.

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7. CONTROL SYSTEM MAINTENANCE/TESTING

Fire pumps shall be tested and maintained in accordance with:

Ministers Specification SA76;

Or,

In accordance with AS1851, as applicable.

Additionally pump start/stop operation from the FIP and emergency controls in the pump room shall be checked/performed, not less than quarterly.