Extreme Fire Solutions
'Uncompromising Personal Service'

Fact Sheet

Do you experience Blackouts when your Emergency Lights & Exit Signs are tested?

If your site is experiencing this, then your site does not comply to AS2293.1 or AS2293.2.

There are many questions regarding Emergency Lighting & Exit Signage and whether these are required to have or not have a testing facility.

Well below are progressive extracts from AS2293.1 Part 1: System Design, Installation and Operation, i.e. performance requirements, and AS2293.2 Part 2: Routine Service & Maintenance.

AS 2293.1 – 1979 with the Third edition in 1987

Under this Standard, Emergency Lighting & Exit Signage systems were required to be installed such that all cabling was to be fire-rated and on independent circuits. The Standard also suggests sensing circuit monitoring of each phase or circuit, to ensure that the Emergency & Exit lights would activate under a loss of power or fire scenario. See the below extract.

5.3 PROTECTION OF THE ELECTRICAL INSTALLATION AGAINST FIRE

5.3.1 Forms of protection Any element of the electrical distribution system supplying the emergency lighting shall, unless specifically exempted, be protected against exposure to fire in one of the following ways:

(a) The use of fire-protected wiring systems complying with the appropriate classification in AS 3013, as specified in Clauses 5.3.2 or 5.3.3.

(b) The use of any wiring system complying with AS 3000 which is protected from exposure to fire by the application of building structure elements to form a barrier having a fire-resistance level of not less than the duration of circuit integrity afforded by the relevant wiring classification specified in Clauses 5.3.2 or 5.3.3 by reference to AS 3013.

Sensing circuits need not be protected in accordance with this clause, but shall be arranged so that any failure resulting from fire will result in operation of the associated emergency lighting.

NOTES:

1 AS 3013 only covers requirements for forms of protection which are not dependent on the use of fire-rated elements of building construction for thermal protection.

2 A summary of the protection required for particular elements of the electrical distribution system is given in Table 5.1.

AS 2293.1 – 1998

The Emergency & Exit Lighting system had come into its own, technology-wise, and the requirement for fire rated cable was removed as back up batteries were integrated into the actual light fittings, changing the 'ball-game' completely. The testing time is as follows for the 1998 systems.

2.3 DURATION OF OPERATION The emergency lighting installation shall be designed to operate in accordance with this Standard for the following periods:

(a) *Initial duration* The duration of operation provided by the installation at the time of commissioning shall be not less than 1.33 times the in-service duration required in terms of Item (b) below.

This duration shall also apply whenever any batteries supplying the emergency lighting are replaced during the life of the installation.

(b) *In-service duration* The duration of operation provided throughout the life of the installation shall not fall below 90 min or such period as may be required by the building regulations.

NOTES:

1 The greater initial duration is required to allow for the depreciation in battery capacity which will occur with time.

Under the Routine Service & Maintenance, the service company doing the test has a requirement to ensure that the system is installed correctly to AS2293.1-1998. This is the performance requirement need to correctly endorse the Annual Fire Safety Statement.

SECTION 4 PROVISION OF DISCHARGE TEST FACILITIES

4.1 SCOPE OF SECTION This Section sets out requirements for the facilities used for conducting periodic discharge tests on the emergency lighting system, as required by AS/NZS 2293.2.

NOTE: The intervals at which such tests should be carried out and the criteria which should be satisfied are set out in AS/NZS 2293.2. The Standard also details the required inspection and maintenance actions associated with such tests.

4.2 REQUIRED FACILITIES Facilities shall be provided for conducting a discharge test on all emergency luminaires and exit signs without necessitating disconnection of supply to the normal lighting. Such facilities shall be either manually initiated or automatically initiated and shall comply with the requirements of Clause 4.3 or Clause 4.4, as applicable.

The arrangement adopted shall check the correct functioning of all elements normally involved in controlling the operation of the emergency luminaires and exit signs. The normal provision for sensing loss of supply (see Clause 2.4.2) may be overridden for the duration of the discharge test but shall be automatically reinstated at the conclusion of the test.

The test facility shall be arranged so that no charging current is supplied to the battery during the performance of a discharge test.

NOTE: It should be noted that, for part of the period during and immediately after a discharge test, the building may be without effective emergency lighting. This risk is considered acceptable, except when the regulatory authority deems otherwise. When selecting a time for the discharge test, consideration should be given to the nature of the occupancy of the building in order to minimize the risk, e.g. conducting the test at a time which will permit recharging of the batteries when the building is unoccupied.

Under AS2293.1, in the extract above, when testing the system, there should not be any disconnection of the supply to general lighting (known as a Blackout Test). So, in other words, if this scenario occurs, it constitutes a failure as a Blackout Test. To avoid these failures, the addition of an independent Emergency & Exit Lighting Test Switch is required to be installed. Additionally, the system also required to have circuit sensing monitoring for phase failure.

AS 2293.1 – 2005

Similar to the Emergency & Exit lighting systems under the 1998 standard, technology had advanced even further; however, the requirements remain the same for the Discharge Test Facilities.

> **4.3 REQUIRED DISCHARGE TEST FACILITIES**
>
> Facilities shall be provided for conducting a discharge test on all emergency escape luminaires and exit signs without necessitating disconnection of supply to the normal lighting. Such facilities shall be either manually operated or automatically operated and shall comply with the requirements of Clause 4.3.1 or Clause 4.3.2, as applicable.
>
> The arrangement adopted shall check the correct functioning of all elements normally involved in controlling the operation of the emergency escape luminaires and exit signs. The normal provision for sensing loss of supply (see Clause 2.3.3) may be overridden for the duration of the discharge test but shall be automatically reinstated at the conclusion of the test.

Current Code - AS 2293.1 – 2019

This standard has further improvements; however, the requirements are still the same as the previous requirements in AS2293.1-2005. Yet, in 2015 or thereabouts, lighting manufacturers of Emergency & Exit Lights released into the market Smart Test fittings, which acts similarly to a sensor light in the way you can activate the testing schedule.

That is to say, if you flick the switch on and off 3 to 5 times quickly, this puts all lights on that circuit into a test mode, and then again in 6 months, with led indication will highlight if the light fitting passes or fails.

Smart Test fittings are suitable for systems that have been installed incorrectly. Like cases where Emergency & Exit lights are installed on the same circuit as general lighting, and a Test Switch is not installed.

All the brochures I have read state that a Smart Test Emergency Light does not require a test switch, which I would agree with, however, the one thing they are not telling you is if you install these lights without installing a test switch, it still will not comply.

It is essential to understand that Test Switches for Emergency & Exit Lights systems are not just for testing, they are also circuit sensing and/or phase failure monitoring which means, for example, if you have Emergency & Exit lights and general lights on A Phase and there are other general lighting circuits on C and B Phase, you will find that if you happen to lose power to C or B Phase, the Emergency & Exit lights will not activate including some emergency lights in the area of C and B phase. This leaves you in the dark which is a big no, no. And not to the Standard either.

This also relates to circuit sensing, which is found on the test switch. It is wired to sense all the other circuit to make sure that when you lose a general lighting circuit, the Test Switch will trigger the Emergency Lights regardless if other circuits are ok and working.

Difference between Manual testing facilities and Automatic testing facilities

Manual testing facilities (Test Switch with Circuit Sensing or Phase Failure)

Where manual testing facilities are provided for discharge testing of the emergency and exits signs, then the testing facility shall be capable of being manually reset, but shall automatically revert to the normal state at the conclusion of the discharge test.

Automatic testing facilities (Smart Test Fittings or Computerised System)

The test facility shall ensure that each emergency escape luminaire and exit sign is automatically subjected to a discharge test in accordance with the relevant procedure and test intervals specified in AS/NZS 2293.2. The system used to time the interval between successive discharge tests shall not be affected during periods when the normal supply is interrupted.

Provision shall be made on an automatic testing facility for an operator to undertake a discharge test at any time.

Please also note that as from AS2293.1 – 2005 the change from Exit Sign say EXIT to the Running Person Sign came into effect, please make sure that you do not have both types of signs throughout your building as this will also be a non-compliance which will hold up your endorsement of the Annual Fire Safety Statement.

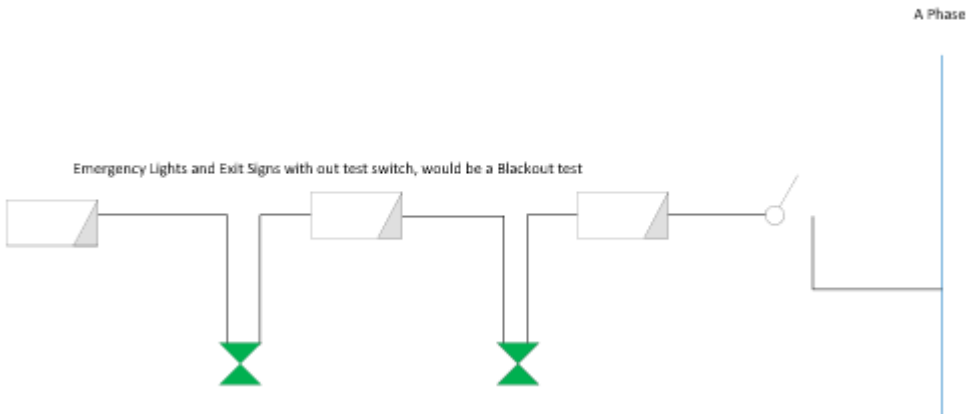


Figure 1 (common site setup which does not comply and has a complete blackout)

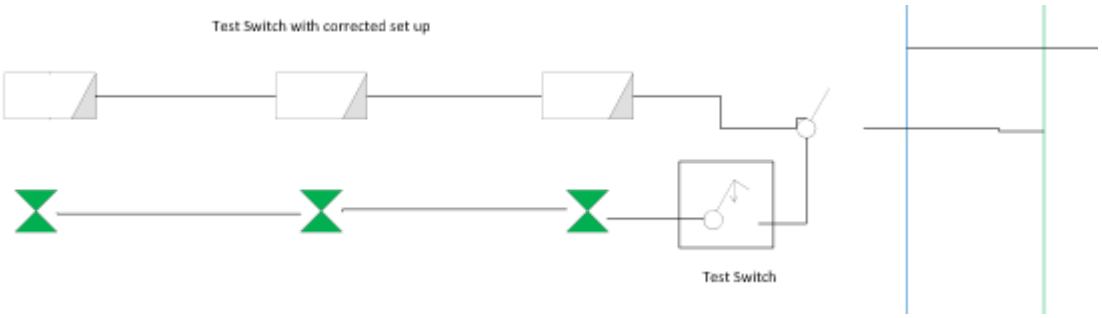


Figure 2 (This partially complies yes it has test switch however this still does not comply)

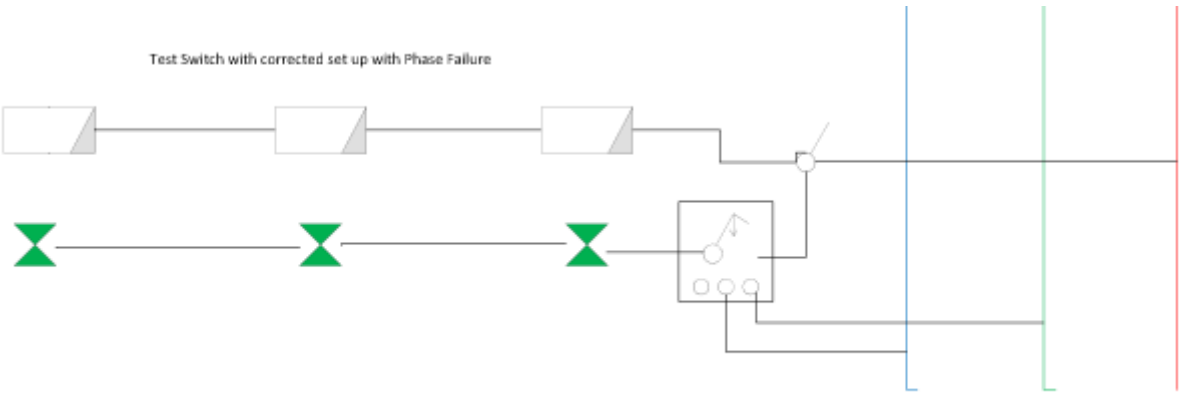


Figure 3 (This is a compliant Emergency Light & Exit Sign set up)

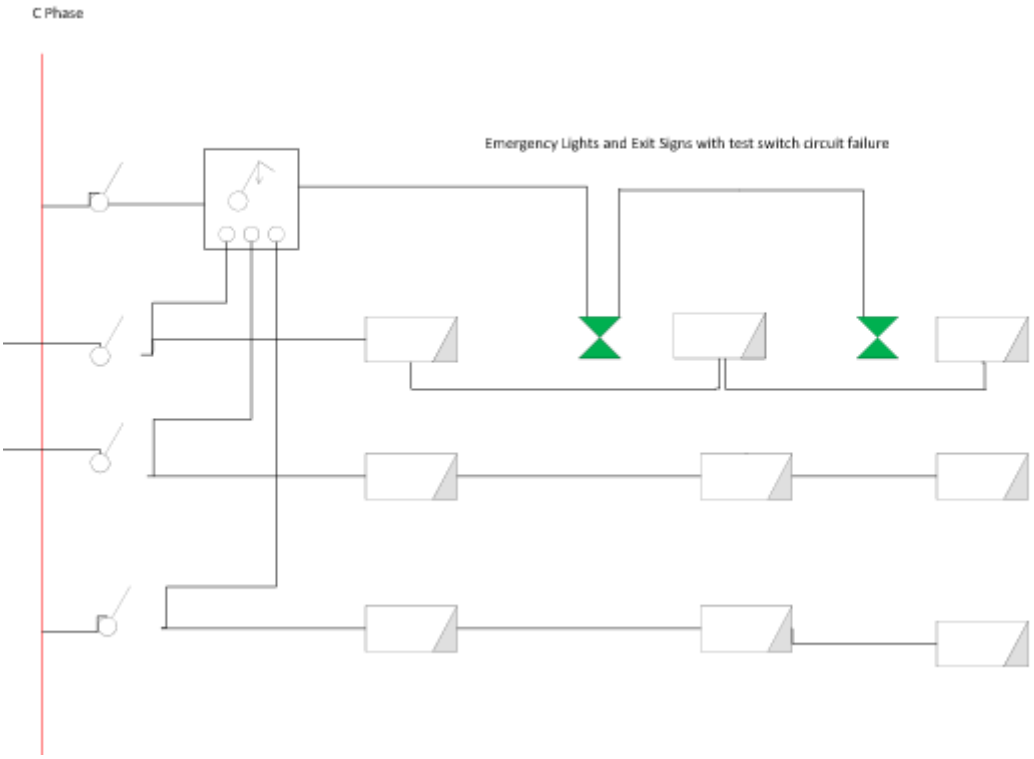
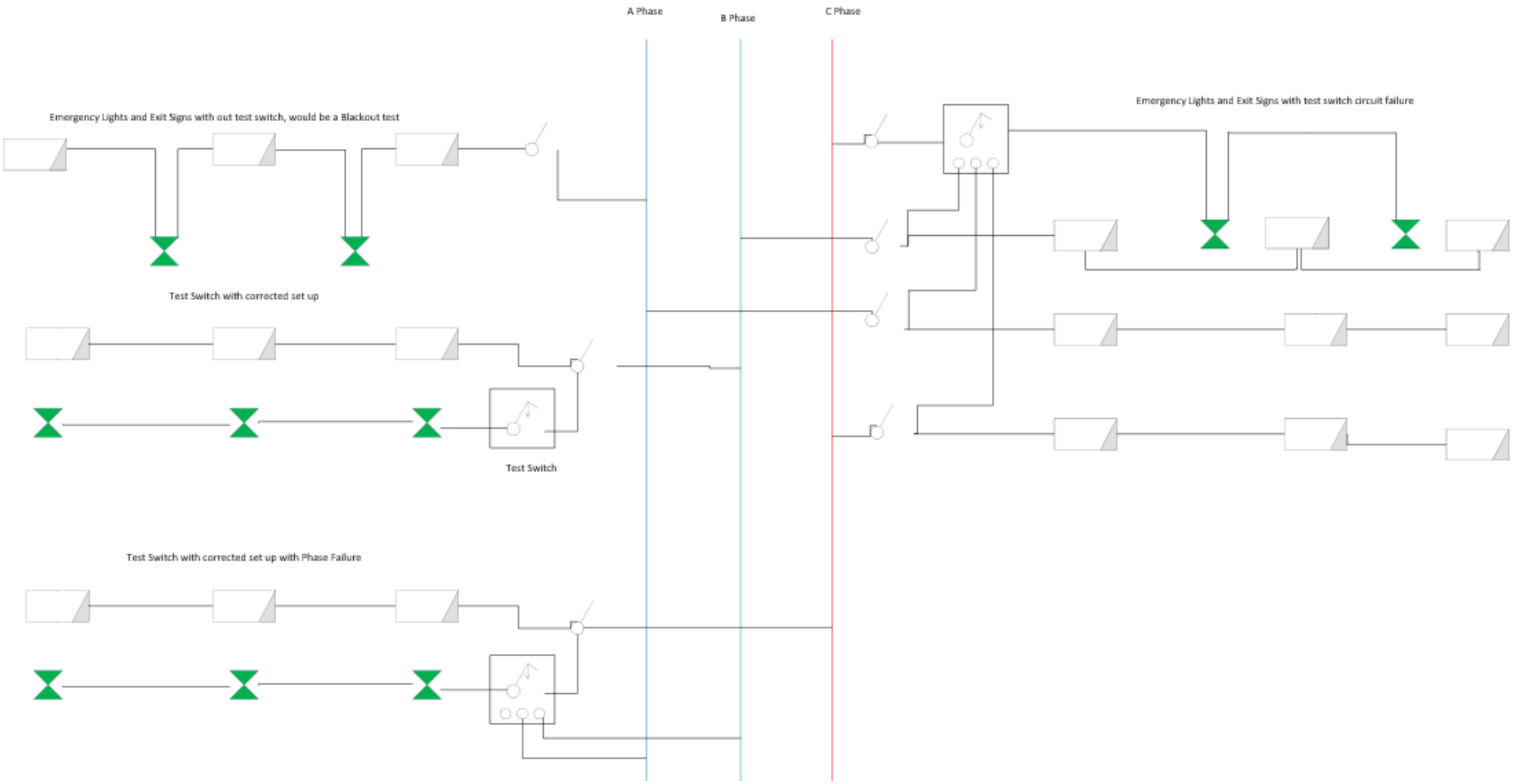


Figure 5 (This is also a complaint an Emergency Light and Exit Sign Setup)

Diagram of compliant and non-compliant Emergency light & Exit Signs



Now let me ask you if your maintenance service provider only making sure that the Emergency & Exits lights are lasting the required 90min and not checking the system is a compliant installation to the AS2293.1?

You could be literally left in the dark as well as face a serious OHS risk from a non-compliant system.

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