



Information Bulletin

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**Use of genuine components: Pre-engineered
fire systems**

Version 1

Approved for release November 2011

FIRE PROTECTION ASSOCIATION AUSTRALIA



Use of genuine components: Pre-engineered fire systems

FPA Australia aims to promote the protection of life, assets and the environment from fire and related emergencies.

1.0 Purpose Statement

The purpose of this document is to increase awareness of the importance of using genuine—i.e. original equipment manufacturer (OEM)—components when servicing pre-engineered fire systems.

2.0 Audience

This Information Bulletin is intended for:

- (i) FPA Australia members;
- (ii) Other stakeholders in the Fire Safety & Construction Industry working with pre-engineered fire systems.

3.0 Background

Non-genuine components are used in industries across the world. However, while they may be cheaper, they may also be less reliable or durable and may even be incompatible with the system into which they are installed.

In the fire protection industry the use of non-genuine components may lead to a failure of the system which may result in loss of life and assets as well as damage to the environment.

This document focuses on pre-engineered fixed fire protection systems and the potential effect of the use of non-genuine components associated with these systems.

4.0 Pre-engineered systems

4.1 What is a pre-engineered system?

A pre-engineered system consists of only components and assemblies that have been tested and proven as part of the complete system to establish the overall system performance capabilities and limitations. The components in a pre-engineered system work together to deliver a minimum level of performance including factors such as minimum agent flow rate, even distribution to the nozzles, nozzle coverage and discharge times.

The system performance limits of pre-engineered systems are established during the original product development and verified by testing as part of product approvals by third party conformity assessment bodies, such as, CSIRO Verification Services, SAI Global, FM, UL, etc. The system limitations and parameters are then documented in the system's listed design manual.

An installer, accredited by the manufacturer and using the design manual, can design and install a system within its specified limits and in doing so, ensure that the installed system will be fit for purpose, perform as intended and offer appropriate fire protection.

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4.2 An effective system

It is important to understand that the performance of the installed pre-engineered system is dependent upon following the manufacturer's installation instructions and using the correct components and brand of extinguishing agent. Any variation to these could have detrimental effects on the system performance.

For example, an incorrect fitting could change the flow characteristics and adversely affect the system effectiveness, possibly reducing the level of protection maybe even to the point of system failure.

Similarly, making sure that cylinder fills and charge pressures are carried out as per the listed design manuals is also important to ensuring the installed system performs as intended.

4.3 Access to components and service manuals

It is essential that the service provider maintaining a pre-engineered system has access to the relevant components and service manuals to allow them to identify specific maintenance requirements as well as ensuring they can identify and select the genuine spare components required to ensure ongoing performance of the system.

The manufacturer and model of the fire system in question must be clearly identified to make sure that the correct service manual is at hand. The client or owner of the equipment should have a copy on file, provided by the installer at the time of installation.

Without access to the proper documentation, a service provider can only guess what the maintenance and spare components requirements for the system may be.

4.4 Hybrid systems

Another problem which can face owners of pre-engineered systems is the use of 'hybrid' systems.

These hybrid systems use components from a number of different fire systems. However, though the components used may be from systems which have been individually tested and approved, no testing has been completed to evaluate their compatibility when used as part of a system from another manufacturer. This lack of testing to prove the performance of the hybrid configuration—in conjunction with a lack of supporting documentation and design specifications—poses a significant risk to the equipment owner.

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5.0 Potential issues from the use of non-genuine components

Unfortunately, it is not uncommon to see pre-engineered systems that have been repaired or modified using non-genuine components to “get the job done”.

Some of the potentially dangerous system modifications which are seen on a regular basis include:

Modification	Observed issue	Potential danger
Incorrect pressure gauges	Incorrect green band (operating pressure range)	Over pressurising or under pressurising systems
Incorrect hose ends	Fittings not matching the hose being used	Loss of pressure or discharge lines leaking
Incorrect cylinder valves and siphon tube (pick-up tube)	Incorrect internal diameters and excess pressure loss	Can severely affect flow rate
Incorrect siphon tube	Use of rigid siphon tubes where flexible ones are required	Incomplete discharge of agent
Incorrect siphon tube	Siphon tubes of incorrect length	Incomplete discharge of agent
Incorrect discharge nozzles	Incorrect orifice sizes	Adversely affects application rates, coverage and discharge times
Incorrect tube/hose and fittings	Incorrect internal diameter	Adversely affects flow rates and discharge times
Incorrect extinguishing agent	Incorrect extinguishing agent used	Adversely affects the fire fighting performance of the system
Incorrect bracketing and support assemblies	Degradation, mechanical damage	Adversely affects system operation, damages components

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6.0 Recommendations

1. FPA Australia recommends that genuine—original manufacturer (OEM)—components are always used when servicing pre-engineered fire systems.
2. If non-genuine components have been used there are two main ways systems can be restored to their original installed specification:
 - (i) In many cases, a system can be easily returned to its original installed specification by reinstating the original system components.
 - (ii) In some cases, it may be necessary to undertake a complete design review of the system in accordance with the original system design manual.

Note: As the design manuals are generally of a proprietary nature it may be necessary to engage the original system manufacturer or one of their appointed and qualified representatives to undertake this review and to ensure that the system is returned to its proper configuration.

7.0 Disclaimer

The opinions expressed in this correspondence reflect those of FPA Australia. However these are subject to change based on receipt of further information regarding the subject matter. You should interpret the technical opinion or information provided carefully and consider the context of how this opinion/information will be used in conjunction with the relevant requirements outlined in regulations (state and/or federal); standards, codes or specifications; certification; accreditation; manufacturer's documentation and advice; and any other relevant requirements, instructions or guidelines. FPA Australia does not accept any responsibility or liability for the accuracy of the opinion/information provided, nor do they accept either directly or indirectly any liabilities, losses and damages arising from the use and application of this opinion/information.

8.0 References

- Fire Protection Association Australia Technical Advisory Committee 11/22 (TAC/1122) – Special Hazard Fire Protection Systems.

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