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## **1. Fire Alarm System Maintenance**

A fire alarm system must provide early and reliable warning of the outbreak of fire. To achieve this, the system remains on watch at all times, ready to activate the alarms in response to a signal from any of the sensors. Regular testing and maintenance must therefore be carried out to ensure the system is always operating correctly.

**WARNING: This equipment contains hazardous voltages that can cause death, serious personal injury, or equipment damage.**

**This equipment contains no user serviceable parts. Refer all maintenance to suitably qualified personnel.**

**The following guidelines are intended to assist the user in understanding their responsibilities regarding the continued safe and proper operation of their fire alarm system. They do not attempt to provide detailed site-specific test and maintenance routines. The user should consult their local Fire Prevention Officer for specific advice.**

## **2. User responsibilities**

### **2.1. Responsible person**

A single person should be appointed by the user to supervise all matters relating to the fire alarm system. In particular:

- Ensuring that the system is checked at least once every 24 hrs and that there are no faults on the system.
- Ensuring that the system is correctly tested and maintained in line with the recommendations of the Fire Prevention Officer.
- That appropriate records are maintained:
  - The Logbook should be kept up to date and made available for inspection by any authorised person.
- That the relevant occupants are aware of their roles and responsibilities in connection with the fire alarm, ensuring:
  - That occupants are instructed in the proper use of the system including how to interpret the alarm indications.
  - That occupants are familiar with the appropriate user controls including the correct use of the disablement features and understand how to avoid the generation of false alarms.
- That situations are avoided that are detrimental to the standard of protection provided by the system:
  - That a clear space of at least 500mm is preserved around and below all fire detectors.
  - That all manual call points remain unobstructed and conspicuous.

- Establishing a liaison with those responsible for changes to or maintenance of the building to ensure that changes do not compromise the effectiveness of the system.
- Updating record documents and operating instructions when building changes are made.
- Ensuring that the level of false alarms is minimised.
- Ensuring that the following spare parts are held within the premises:
  - 6 replacement glasses and test keys for manual call points [unless the system has less than 12 MCPs, in which case only 2 set of glasses and keys are required].
  - 1 set of spare fuses.
  - Any other spare parts recommended by the servicing agent.

Your local Fire Prevention Officer can provide recommendations on how these responsibilities should be discharged.

## **3. Weekly Test Routine by the User**

**WARNING: Before testing, the operator must be aware both of the operation of all devices fitted to any auxiliary circuits and the consequences of their operation.** (Example: A connection to call the fire brigade).

Refer to Control Panel User Instructions for correct panel access and user operation.

The following guide is not comprehensive and you should consult your local Fire Prevention Officer to determine the most suitable test routine for your installation.

- Contact the alarm receiving centre immediately before and after the weekly test, to prevent unwanted alarms and confirm alarm receipt.
- At least one manual call point and one fire detector [on different zones] should be operated during normal working hours on the same day each week at approximately the same time of day.
  - The zones operated should be varied at least each month.
  - The manual call points and fire detectors should be tested on a rotating basis so that all installed units are checked at least once during a three month period.
  - To operate a manual call point use the Test Key provided. To operate a detector, use a smoke generator or heat source as appropriate for the type of detector.
- Operation of the sounders should be confirmed, identifying any area of poor audibility.
- The receipt of the fire signal at any remote monitoring centres should be confirmed.
- The operation of auxiliary items such as door closers should be confirmed.

- Operate the Test Lamps function as detailed in the user manual - check all indicators operate as described in the manual.
  - Enter details of the test in the system log-book.
- If shift working is operated, additional fire tests should be arranged to ensure all staff are familiar with the alarm signals.

To avoid confusion, the sounder operation during the test should be limited to 1 minute.

#### **4. Monthly Test Routine**

If an automatically started emergency power generator is used as part of the standby power supply, start the generator by simulating the failure of the normal power supply and operate on load for at least 1 hour. At the end of the test, check and replenish fuel, oil and coolant levels.

**WARNING: Any person undertaking the above mentioned tasks should be adequately trained and competent to carry out the test safely.**

#### **5. Inspection and Servicing**

This section provides an outline of the inspection and servicing recommendations. For further, more detailed guidance, consult your local Fire Prevention Officer.

**It is essential that regular, periodic inspection and servicing is carried out on the system. This work should only be undertaken by a competent person with appropriate specialist knowledge.**

##### **5.1. Recommendations for periodic inspection and test of the system**

The period between successive inspection and service visits should be based on a risk assessment, taking into consideration the type of system installed, the operating environment and other site related issues which may affect the long term operation of the system. The period between visits should not exceed 6 months.

The following checks should be made:

1. Entries in the logbook should be checked and any remedial action taken.
2. A visual inspection should be made to check whether structural or occupancy changes have affected the siting of manual call points or sounders.
3. The record of false alarms should be checked and appropriate action taken if the rate of false alarms exceeds the recommendations of your local Fire Prevention Officer.
4. The batteries should be disconnected and a full load alarm simulated.
5. The batteries and their connections should be examined to ensure they are in good serviceable condition and are unlikely to fail before the next quarterly inspection. The

batteries should be subjected to a momentary load test.

6. The fire alarm functions of the control and indicating equipment should be checked by operating a device in each zone.
7. The operation of the fire alarm devices [sounders] should be checked.
8. All controls and indications on the fire panel should be checked.
9. The operation of any automatic signalling link to a remote monitoring station should be checked.
10. All ancillary functions of the fire alarm panel should be checked.
11. All fault indicators and their circuits should be checked, where practicable, by simulation of the fault condition.
12. On completion, any defects should be recorded in the logbook and reported to the responsible person, and corrective action should be taken.

##### **5.2. Recommendations for inspection and test of the system over a 12-month period**

In addition to those tests listed above, the following are recommended:

1. Every manual call point should have been operated at least once.
2. All automatic fire detectors should have been examined and tested via the appropriate means.
3. All fire alarm devices should have been tested and checked for correct location.
4. A visual inspection should be made to confirm that all cable fittings and equipment are secure, undamaged and adequately protected.
5. The fire alarm panel configuration should be checked to ensure it complies with the Panel Configuration Record. Any changes should be verified with the responsible person and the Panel Configuration Record updated if the changes are authorised.
6. The standby power capacity should be verified as sufficient for the system.
7. On completion, any defects should be recorded in the logbook and reported to the responsible person, and corrective action should be taken.

##### **5.3. Battery Replacement**

The useful life of the standby batteries in this application is three years. The batteries must be replaced after this time. To ensure this, when first installed, the batteries should be clearly labelled with the date of installation and scheduled replacement date.

### 5.3.1. Battery Removal

The batteries should only be removed and replaced by a suitably qualified electrical engineer.

The panel contains dangerous voltages and failure to follow the instructions below may result in electric shock and damage to the panel.

To remove the batteries, follow the steps below:

1. Switch off the mains supply to the panel by operating the Supply Disconnect switch. The panel will indicate a PSU FAULT after about 60 seconds.
2. Slacken the three screws holding the front cover of the panel in place (one at the top, two at the bottom). The screws do not need to be removed completely.
3. Remove the front cover by pulling it away from the panel enclosure.
4. Disconnect the red battery lead from the left-most battery. The panel will lose all power.
5. Disconnect the blue battery lead from the left-most battery and the adjacent battery.
6. Remove the battery clamp by undoing the screw holding the battery clamp in place.
7. Remove the left-most battery.  
**NOTE: Batteries are heavy and should be handled with care.**
8. Slide the remaining battery to the left and disconnect the black battery lead from the battery.
9. Remove the battery from the enclosure.

To install replacement batteries after removing the old batteries, follow the steps below:

1. Insert the first battery into the enclosure, with the terminals at the top. Attach the black battery lead to the battery and slide the battery to the right, under the control board.
2. Insert the second battery and re-attach the battery clamp to hold both batteries in place.
3. Connect the blue battery lead to the black terminal on the left-most battery and to the red terminal on the adjacent battery.
4. Connect the red battery lead to the left-most battery. The panel WILL NOT power up at this stage.
5. Attach a label to the batteries, showing the date of installation.
6. Re-attach the panel front cover and secure via the three screws.
7. Switch the mains supply on by operating the Supply Disconnect switch. The panel will power up.
8. Check that no faults are indicated on the panel. Any faults shown should be traced and rectified.

9. Enter details of the battery replacement in the logbook.

### 5.3.2. Battery Disposal

Sealed Lead Acid Batteries are a hazard to the environment and must be disposed of safely and in accordance with local regulations. Contact the battery manufacturer or your supplier for details on correct disposal.

## 6. Non-Routine attention

### 6.1. Appointment of a new servicing organisation:

A special inspection of an existing fire alarm system and its documentation should be carried out when a new servicing organisation is appointed, identifying any areas of major non-compliance with the requirements of your local Fire Prevention Officer.

### 6.2. Repair of faults or damage:

- Emergency call out arrangements should be made and contact details should be prominently displayed at the fire control and indicating panel.
- The User should record all faults or damage in the Log Book and arrange for repair to be carried out as soon as possible.

### 6.3. Modifications to the system:

- The responsibility for any modification must reside with a person who is competent in the basic principles of fire alarm system design and conversant with local regulations.
- All the effects of the proposed modification on the system should be checked for compliance with the requirements of fire safety legislation.
- All modifications should be agreed in writing with the Responsible Person and where appropriate, the enforcing authority and the insurers.
- A site-specific test schedule should be produced to ensure that all elements of the modification and its affects on the system are fully tested in line with the recommendations of your local Fire Prevention Officer.
- On completion of the modifications, all as-fitted drawings and relevant documentation should be up-dated.
- On completion of the commissioning of the work and tests a modification certificate complying with the recommendations of your local Fire Prevention Officer should be issued.

### 6.4. Action to address an unacceptable rate of false alarms:

Consult your local Fire Prevention Officer

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### 6.5. Inspection and test of the system following any fire:

As soon as possible after the fire:

- Inspect and test every manual call point, fire detector or fire alarm device [sounder] that might have been affected by the fire.
- Examine and test any other part of the system lying within the fire area and other areas affected by corrosive smoke from the fire for signs of damage [cables, power supplies, control equipment etc].
- Any circuits external to the control and indicating equipment that could have been affected by the fire should be tested.
- Any defects should be recorded in the Log Book and brought to the attention of the responsible Person.

### 6.6. Inspection and tests of the system after long periods of disconnection:

The system should be inspected and tested as per the recommendations for 12-monthly testing

## 7. Maintaining the Log Book

The Log Book should be used to record the following:

- The Name of the responsible Person.
- Brief details of the maintenance arrangements.
- Dates and times of all fire alarm signals [whether false, genuine, test or fire drill] along with the

type of activating device [manual call point or detector] and its location.

- Causes, circumstances surrounding and category of all false alarms. The categories are:
  - **U** - *Unwanted alarms* – caused by a combination of environmental influences, fire-like phenomena, inappropriate action by people in the building, accidental damage.
  - **E** - *Equipment false alarms* – caused by malfunction of equipment forming part of the fire detection and alarm system.
  - **M** - *Malicious false alarms* – arising from malicious action.
  - **G** - *False alarms with good intent* – by persons with a genuine belief that there is a fire.
  - **?** - *Unknown* – category to be used where there is any doubt about the actual cause.
- Dates, times and types of all tests.
- Dates, times and types of all faults and defects.
- Dates and types of all maintenance [service visit or non-routine attention].
- Temporary disconnections or disablements.
- Dates and brief description of system changes, component or equipment replacements.
- Notes of any outstanding work.

When not in use, the log book should be stored in a safe, preferably fireproof location.























**9. List of Equipment Fitted**

<b>Control Panel:</b>
Type:  Serial Number:  Number of Zones:
<b>Power Supply:</b>
Type:  Serial number:
<b>Batteries:</b>
Capacity:
<b>Detectors:</b>
Number and type:
<b>Manual Call Points:</b>
Number and type:
<b>Sounders:</b>
Number and type:
<b>Repeater panels:</b>
Quantity  With/without PSU and batteries.
<b>Ancillary Equipment:</b>



**12. Panel Configuration Record:**

**Table 1 – DUO-TEC Panel DIL Switch Configuration Record**

Switch	Function	Position	Actual Setting
1	Zone 1 Latching Fire Alarm Indication	Off 	
	Zone 1 Non-latching Fire Alarm Indication	On 	
2	Active fault monitoring on zones (10uF capacitor EOL)	Off 	
	Passive fault monitoring on zones (3K9 to 6K8 resistor EOL) (See also DIL switch 3 operation)	On 	
3	Normal Sounder operation	Off 	
	Alert Sounder operation	On 	
4	Dependency (coincidence) Configuration mode disabled.	Off 	Table 2
	Zones can be configured dependency (coincidence) mode	On 	
5	General Alarms sounder operation	Off 	
	Zonal Alarms sounder operation	On 	
6	Short Circuit Fault monitoring on zones	Off 	
	No Short Circuit Fault Monitoring on zones (S/C = Fire Alarm)	On 	
7	Auxiliary 24Vdc output is always switched on	Off 	
	Auxiliary 24Vdc output turns off briefly during panel reset.	On 	
8	Internal Buzzer operates for Fires & Faults	Off 	
	Internal buzzer does not operate for Fires & Faults	On 	
9	Repeater Configuration mode disabled.	Off 	No. _____
	Repeater Configuration mode active.	On 	
10	Sounder Expansion Board Not Fitted (8-zone panel only)	Off 	NOT USED
	Sounder Expansion Board Fitted (8-zone panel only)	On 	
11	NOT USED	N/A	N/A
12	NOT USED	N/A	N/A

**Table 2 – Zone Dependency Configuration Record**

Zone Number	Dependency (YES/NO)
1	
2	
3	
4	
5	
6	
7	
8	

**Table 3 - Record of system alterations**

Details of any alterations made to the system should be recorded below. In addition to date and engineer's details, this information should include product descriptions and references and reasons for the alterations.

<b>Date</b>	<b>Engineer's Details</b>	<b>Detail of Alterations Made</b>	<b>Notes</b>	<b>Responsible Person Signature</b>







**Table 5 - Record of false alarms.**

Action Completed												
Further action required												
Category of false alarm [U, E, M, G, ?]												
Findings of Maintenance Engineer												
Maintenance visit required [Yes/No]												
Cause/Brief circumstances [Where cause is unknown, record activities in the area]												
Device that triggered the alarm signal												
Zone												
Time												
Date												

EQUIPMENT:

**DUO-CEL**

WRITTEN BY: RKP

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**Record of false alarms.**

<b>Action Completed</b>												
<b>Further action required</b>												
<b>Category of false alarm</b> [U, E, M, G, ?]												
<b>Findings of Maintenance Engineer</b>												
<b>Maintenance visit required</b> [Yes/No]												
<b>Cause/Brief circumstances</b> [Where cause is unknown, record activities in the area]												
<b>Device that triggered the alarm signal</b>												
<b>Zone</b>												
<b>Time</b>												
<b>Date</b>												

**Record of false alarms.**

<b>Action Completed</b>												
<b>Further action required</b>												
<b>Category of false alarm</b> [U, E, M, G, ?]												
<b>Findings of Maintenance Engineer</b>												
<b>Maintenance visit required</b> [Yes/No]												
<b>Cause/Brief circumstances</b> [Where cause is unknown, record activities in the area]												
<b>Device that triggered the alarm signal</b>												
<b>Zone</b>												
<b>Time</b>												
<b>Date</b>												







