Operation & Maintenance Manual

Benchmark Vaccines Limited

4 Warner Drive

Springwood Industrial Estate

Braintree

Essex

CM7 SYW



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ADT Fire & Security Plc.
Unit 5
Redwing Court Business Centre
Ashton Road
Romford
Essex
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tyco Integrated Fire & Security

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1 General Information

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1.1 About The Manual

This Operating and Maintenance Manual has been produced to enable the Systems installed to be properly Operated and Maintained.

It is intended as a general guide for Users of the Systems, and as an Engineering Manual for the on-going Support and Maintenance of the Systems by competent Building Services Engineers, or Specialist Engineers, as appropriate.

The Manual is divided into sections which as well as giving General Information and relevant Health and Safety information also detail by Section are the individual Systems installed to enable the relevant information to be located:

Section 2 - 3 provides descriptions of the installed systems; their Components, Configuration, Locations, User Manuals, Maintenance Instructions, Technical and Manufacturers Literature,
Test Certificates and Commissioning data generated during the course of the Contract.

Section 4 contains Health & Safety information necessary to enable the building and the systems to be operated and maintained without risk to occupants and service personnel.

Disclaimer

O&M Manual updates will be issued where system modifications or alterations are made by ADT Fire & Security. The owner of the Manual is however responsible for maintaining their own updated copies where system modifications or alterations are made to the systems by „others".

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1.2 Project Directory

Role	Organisation Name & Address
Client	4 Warner Drive Springwood Industrial Estate Braintree Essex CM7 2YW
Fire and Security Systems Contractor	ADT Fire & Security Plc. Unit 5 Redwing Court Business Centre Ashton Road Romford Essex RM3 8QQ T: 01708 544000 F: 01708 345986 WEB Address: http://www.tycosafetyproducts.com
Project Manager	John Parker Email Address: jparker02@tycoint.com
Site Details	4 Warner Drive Springwood Industrial Estate Braintree Essex CM7 2YW

1.3 Updates To Operation & Maintenance Manual

This page is to add and record changes to the system(s) that have taken place, which require information adding to the existing O&M Manual.

Date	Description of Additions Made	Pages Updated or Added	Company/Name	Facilities Managers Signature

1.4 Abbreviations

HSE	Health and Safety Executive
BS(i)	British Standard (institution)
CDM	Construction (Design and Management) Regulations 2007
COSHH	Control of Substances Hazardous to Health
NACOSS	National Approval Council for Security Systems
RIDDOR	Reporting of Injuries, Diseases & Dangerous Occurrences Regulations
PPE	Personal Protective Equipment
dB	Decibel (sound measurement)
IAS	Intruder Alarm System

2 Fire Alarm System

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2.1 System Overview

The following is for an upgrade and modification to an existing ADT Fire Alarm System installed to conform to the recommendations of BS5839: Pt. 1:2013.

The addressable analogue fire detection and alarm systems is located at 4 Warner Drive, Springwood Industrial Estate to provide full control and indication of the fire condition.

The fire alarm system comprises of the control and indicating equipment, detectors, manual call points and interface units. The system uses loop wiring for the detection circuits.

The system is classified as a category P1/M system, satisfying the requirements of both a P1 & M System as classified below;

- P1 System - The system is installed throughout the building - the objective being to call the fire brigade as early as possible to ensure that any damage caused by fire is minimised. Small low risk areas can be accepted, such as toilets and cupboards less than 1m².

- M System - Manual systems e.g. hand bells, gongs etc, may be purely manual or manual electric, the latter may have call points and sounders. They rely on the occupants of the building discovering the fire and acting to warn others by operating the system. Such systems form the basic requirement for places of employment with no sleeping risk.

Main Plant and Equipment	
Item	**Location**
Profile P485D 2-4 Loop Panel	Ground Floor Entrance Area
Profile P885D 2-8 Loop Panel	Entrance Corridor

The system is wired with 1.5mm² FP200 cable with Red PVC Sheath.

2.2 Equipment Overview

Control Panels

Zettler PROFILE P485D

PROFILE is a highly featured digital addressable fire alarm control panel featuring an advanced TFT colour touch-screen user interface that is ergonomically engineered specifically for fire alarm control. It is designed for operation with or without gloves and provides easy-to-use, intuitive and flexible user controls including keyless log-on using RFID tags, coded for different access levels.

The systems provide up to four loops, each of 250 addresses making it suitable for medium to large sized premises. Running the robust MZXDigital loop protocol, the panel utilises all the existing proven MZX detectors, interface modules and notification devices including the new Generation 6 detectors and Quad I/O modules. The PROFILE fire detection controller is the heart of a comprehensive fire detection system that can be used to protect both life and property. Any combination of up to 99 PROFILE panels can be networked together using copper of fibre-optic medium to provide seamless integration across the most complex facilities.

Zettler PROFILE P885D

PROFILE is a highly featured digital addressable fire alarm control panel featuring an advanced TFT colour touch-screen user interface that is ergonomically engineered specifically for fire alarm control. It is designed for operation with or without gloves and provides easy-to-use, intuitive and flexible user controls including keyless log-on using RFID tags, coded for different access levels.

The system provides up to eight loops, each of 250 addresses making it suitable for larger sized premises. Running the robust MZXDigital loop protocol, the panel utilises all the existing proven MZX detectors, interface modules and notification devices including the new Generation 6 detectors and Quad I/O modules.

TLI800EN Network Interface Module

MX Net provides the gateway to allow a number of the MZX fire controllers to be “seamlessly” networked together, from a simple two controller configuration to a complex multi user distributed installation.
The MX Net communications network comprises of network interface modules and peripheral equipment that together form a fault resistant and flexible peer-to-peer network for the MX Digital addressable fire systems controllers.
With the MZX Technology Network, each MZX Fire Controller on the network permits an operator to interrogate and control any other MZX Fire Controller on the network, the MZX Technology Network allows for up to a maximum of five nodes on the network to be configured either as Master operating stations or TXG graphical user interfaces (refer to datasheet PSF206).

Generation 6 Detection

The 850 and 830 series of fire detectors are for use in an addressable system which uses the Tyco MX Digital Protocol, where a number of detectors are placed in key areas around the building.

The function of the detector is simple to qualify environmental variables and provide the resulting numerical value to the fire alarm control panel.

The fire control panel processes the detector values and assesses whether an alarm needs to be issued.

Depending on the detector variant, the environmental variables monitored will be combinations of the following:

- Temperature.
- Smoke density.
- Concentration of Carbon Monoxide (CO).

The system utilises:

- 850PH Photo Heat Detector

850PH Photo Heat Detector

With the ability to detect a wide range of fires from flaming to smouldering types, the combined optical and heat multi-sensor detector is the preferred choice for a range of applications including light industrial, retail and office environments. It operates in a number of approved modes and sensitivities that can be dynamically selected to suit different environmental conditions.

Detector Bases

The system utilises 5” Universal Bases all of which accept the full range of MX Low Profile Digital Addressable Detectors.

The Detector bases are designed to snap-fit to the ceiling tile adaptor or can be screw fixed to a ceiling or electrical box in the traditional manner. A park position allows the detector to be mechanically attached to the base without making electrical connection to facilitate the testing of electronic free bases.

5" Universal Base

This is the most common base designed to fix directly to the ceiling or various common back boxes. This base allows a detector to be plugged in directly or a functional base to be plugged in between the base and detector.

Digital Call Points

The system utilises CP820 (Indoor) Call Points.

The call points are surface mounted and incorporate plastic coated glass to eliminate loose fragments and include a key operated test facility. All units are fitted with a red LED at the top edge of the front cover providing a visual indication that the call point has been operated.

The Minerva MX Controller may be configured to initiate one of two alarm levels to groups of call points:-

- Evacuate.
- Alert.

Interface Module

- RIM800 - Relay Interface Module

Are sited throughout the system in various locations.

RIM800 Relay Interface Module

The RIM800 provides a single programmable relay output from the MX Digital addressable loop, which can be programmed for a variety of applications including signalling fire conditions to plant, machinery, fire doors, dampers and security systems. The relay coil is monitored. The relay contact is rated for 2A at 24Vdc.

Alarm Notification

Audible

812SB MX Loop Powered UL Sounder Base

The system incorporates the use of 812SB MX loop powered UL sounder bases for use with all 800 series MX VIRTUAL detectors. This low current unit provides complete audio coverage without obtrusive holes in the moulding.

Visual

SAB801 MX Sounder Addressable Beacon

The SAB801 is a loop powered, low current sounder addressable beacon. Incorporated into the SAB801 is a flashing beacon with red lens arrangement on the front.

Line Isolators

To enhance the System further, Line Isolators have been connected at various points on each of the loops, which monitor the condition on that portion of the line.

Remote Indicators

Remote LED indicators have been installed to help identify the detector in an alarm condition where the detector itself is not easily accessible.

System Wiring

The system is wired using 2 Core 1.5mm² FP200 Red Sheathed Cable in a Loop formation, all as indicated on the As Installed drawings.

2.3 Equipment Schedules & Manufacturers Details

The Fire Alarm system is the Minerva MX system supplied, installed and commissioned by ADT Fire & Security Plc. consists of the following equipment.

Part Number	Make & Model	Manufacturer	Supplier
516.800.913	812SB MX Loop Powered UL Sounder	ADT Fire & Security	ADT Fire & Security
557.202.080	TLI800EN Network Card		
557.200.553	P485D Profile 2-4 loop panel deep		
568.800.033	RIM800 Module c/w Front Cover		
557.200.555	P885D Profile 2-8 loop panel deep		
517.035.011	K2214 ALM Metal Surface Mount		
516.800.908	801 RIL Remote Indication LED		
517.025.035	SMP69 Stainless Steel DP Unit		
517.025.033	DPS1500 Probe Tube Stainless Steel		
557.202.007	XL-MX Two Loop Digital Extension		
557.202.210	PSU830 Power Supply Module		
514.800.603.A	CP820 Indoor Manual Call point		
517.050.017	5B 5” Universal Base		
516.830.051	830PH Photo Heat Detector		
516.800.956	SAB801 Sounder Addressable Beacon (White)		
Address	Mucklow Hill, Mucklow Hill Business Park, Halesowen, West Midlands, B62 8DA		
Tel No.	0121 255 6085	Fax No.	0121 422 3779
WEB Address:	http://www.tycosafetyproducts.com		

Part Number	Make & Model	Manufacturer	Supplier
PS-12380	12V 38ah Battery	Power-Sonic	ADT Fire & Security
Address	3 Buckingham Square, Hurricane Way, Wickford, Essex, SS11 8YQ		
Tel No.	01268 560686	Fax No.	01268 560902
WEB Address	http://www.power-sonic.co.uk		

2.4 Manufacturers Literature/Manuals

Ref.	Title
2.4.1	P485D_P405D - PROFILE 2-4 Loop 80_240 Zone Panel
2.4.2	P885D_P805D Profile 2-8 Loop 80_240 Zone Panel
2.4.3	PROFILE - Fire Alarm Control Panels - User Manual v1.0
2.4.4	PROFILE - Fire Alarm Control Panels - Service Guide v1.0
2.4.5	850 Series Fire Detectors - Generation 6 (ADT2011)
2.4.6	Rechargeable Sealed Lead-Acid Battery
2.4.7	TLI800EN Zettler Datasheet 557.202.080
2.4.8	MCP_CP Series (ADT2008)
2.4.9	Module Housings
2.4.10	812SB MX Loop Powered UL Sounder
2.4.11	SMP69 Stainless Steel DP Unit
2.4.12	XL-MX Two Loop MX Digital
2.4.13	Fire Datasheet - Project Specific

P485D/P405D

PROFILE 2-4 loop 80/240 zone panel

ZETTLER

PROFILE is a highly featured digital addressable fire alarm control panel featuring an advanced TFT colour touch-screen user interface that is ergonomically engineered specifically for fire alarm control. It is designed for operation with or without gloves and provides easy-to-use, intuitive and flexible user controls including keyless log-on using RFID tags, coded for different access levels.

The systems provide up to four loops, each of 250 addresses making it suitable for medium to large sized premises. Running the robust MZXDigital loop protocol, the panel utilises all the existing proven MZX detectors, interface modules and notification devices including the new Generation 6 detectors and Quad I/O modules.

The PROFILE fire detection controller is the heart of a comprehensive fire detection system that can be used to protect both life and property.

Any combination of up to 99 PROFILE panels can be networked together using copper of fibre-optic medium to provide seamless integration across the most complex facilities.



Features

// 8.4" TFT colour touch screen multilingual user interface - architecturally attractive and fully programmable
// Ergonomic Icon Display - Simple to operate user interface eliminates operator errors
// Touch sensitive status LED's provide event summary information - Instant access to detailed event information.
// Context sensitive help and on screen operator instructions - Reduces the need for user training and provides support for infrequent users.
// User configurable on screen site maps - No need for additional site plans.
// Programmable graphic quiescent display - Opportunity for customer branding
// Comprehensive point management and disable functions- Gives the user full control and reduces service and maintenance effort
// Selectively view or print from the extensive 10,000 event log using dynamic filters - Effective event diagnostics to quickly resolve site investigations
// Keyless log-on using RFID tags - Identifies and logs user actions

P485D/P405D

Technical Specifications

General	
Number of loops	2 Expandible to 4
Addresses per loop	250
Total number of addresses	1000
No of zonal LEDs	80 (P485D only)
No of Zones supported	240
Mechanical	
Dimensions	H x W x D 480 x 410 x 205 mm
Weight	10.6 Kg
Colour	
Housing	RAL 7035
Control Facia	Pantone Grey 431C
Environmental	
Operating Temperature	-8°C to +55°C
Storage Temperature	-20°C to +70°C
Relative Humidity	Relative Humidity: 90% RH continuous (non-condensing)
EMC/RFI:	EN50130-4, EN61000-6-3
Electrical	
Supply Voltage(panel):	230 VAC 50/60 Hz
Input Current (panel):	1.6 A
Max battery capacity	38 A/H

Ordering Information

557.200.553 P485D PROFILE 2-4 loop panel deep
557.200.554 P405D PROFILE 2-4 loop panel deep

ZETTLER, is a leading brand of fire detection, security, and care communications products in the European market. The ZETTLER fire detection product line includes a wide range MZX TECHNOLOGY EN54 CPD approved fire detection products carrying approvals and cross-listings, including VdS and NF, for all European countries. The ZETTLER care communications product line is a technology leader providing the latest IP based Nursecall, Emergency Call, Communication and Management solutions for care homes, hospitals, prisons, and related markets. The ZETTLER product lines are available through ZETTLER dealers as well as many ADT and Tyco offices around the world. For more information, visit www.zettlerfire.com.

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P885D/P805D

PROFILE 2-8 loop 80/240 zone panel

ZETTLER

PROFILE is a highly featured digital addressable fire alarm control panel featuring an advanced TFT colour touch-screen user interface that is ergonomically engineered specifically for fire alarm control. It is designed for operation with or without gloves and provides easy-to-use, intuitive and flexible user controls including keyless log-on using RFID tags, coded for different access levels.

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// Selectively view or print from the extensive 10,000 event log using dynamic filters - Effective event diagnostics to quickly resolve site investigations
// Keyless log-on using RFID tags - Identifies and logs user actions

P885D/P805D

Technical Specifications

	P885D	P805D
	PROFILE 2-8 loop panel with TFT touchscreen display 80 zonal LEDs 2000 addresses 5A psu deep housing for 38 AH batteries	PROFILE 2-8 loop panel with TFT touchscreen display 240 zones 2000 addresses 5A psu deep housing for 38 AH batteries
General		
Number of loops	2 Expandible to 8	
Addresses per loop	250	
Total number of addresses	2000	
No of zonal LEDs	80 (P885D only)	
No of Zones supported	240	
Mechanical		
Dimensions	H x W x D 580 x 458 x 209 mm	
Weight	15.2 Kg	
Colour		
Housing	RAL 7035	
Control Facia	Pantone Grey 431C	
Environmental		
Operating Temperature	-8°C to +55°C	
Storage Temperature	-20°C to +70°C	
Relative Humidity	Relative Humidity: 90% RH continuous (non-condensing)	
EMC/RFI:	EN50130-4, EN61000-6-3	
Electrical		
Supply Voltage(panel):	230 VAC 50/60 Hz	
Input Current (panel):	1.6 A	

Ordering Information

557.200.555 P885D PROFILE 2-8 loop panel deep
557.200.556 P805D PROFILE 2-8 loop panel deep

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PROFILE Fire Alarm Control Panels

From Firmware version 24

User Manual

120.515.184_PROFILE-P-U

Doc. version 1.0
25. February 2014

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1 Operator Instructions

This chapter provides the primary information on using the fire alarm control panel, including:

- An overview of the controls for interacting with the fire alarm control panel.
- Guidance on operator actions. There are necessary actions in the event of a fault or alarm. There are some 'voluntary' actions, such as temporarily disabling detectors to prevent false alarms.

1.1 Controls Introduction

You interact with the system using a touch sensitive control pad shown in Fig. 1. There are buttons you can touch, and LED indicators. In general the LED indicators signal abnormal conditions (such as 'Fault').

It is not just buttons that are touch sensitive – for example you can touch the 'General' area (darker grey) to see a summary of events.For details of using the functions of the 'complex interactions' area see "Using the Functions" on page 13. For details of the 'simple one-touch' area see the next few sections.

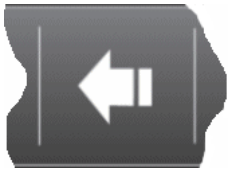


Fig. 1: Control Pad



Return to the Home menu screen – the starting point from where all the menu buttons are accessible. See p 5.

Or if there is a fire, returns to the 'View Fires' screen – see 6.



Undo the last screen touch – return to the previous screen.

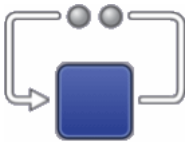
If there is a fire and you have just used the 'Home' button above, show the 'Home' screen.



See helpful background information on the system. See p 13.



Silence the panel's internal buzzer. See p 7.



Cycle through alarms showing details. More on p 8.



Silence the sounders. See p 8.

Keyswitch protected – see "Keyswitch Protected Functions" on page 29.



Use to reset the panel after a fire situation has been resolved. See p 3.

Keyswitch protected – see "Keyswitch Protected Functions" on page 29.



Icon changes when you touch the panel. Provides confidence the panel is responding, even if nothing happens, due to insufficient user access for example.



There is a fire alarm. See p 6.



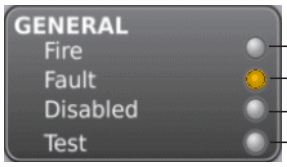
Fire Brigade Signalling has activated. See p 7



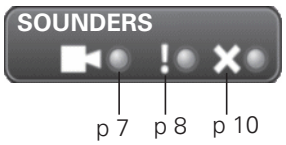
The control panel is busy processing.



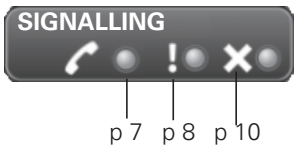
Walk Test is active. See p 26.







Status of sounders: activated, fault and disabled (from left to right)



Status of Fire Brigade Signalling: activated, fault and disabled (from left to right)



Status of protection: activated, fault and disabled (from left to right). This gives the status of any interfaces to external equipment that may be fitted to the loops.



The extinguishing system has activated.



There is a fault in the extinguishing system.

1.2 Fire Responses

In the event of a fire, this is signalled by the panel display shown in Fig. .2. Details of the display are provided in the next few sections.

In the event of a fire alarm follow the local procedures for evacuating the building and so on. This may involve the 'Investigating Alarms' procedure below.

There are also associated indications:

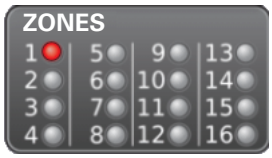


Sounders activated indication.



Fire Brigade signalling activated indication.

There are facilities for locating the source of the fire and monitoring its spread, for use by nominated on-site personnel or the fire brigade:



Location of the fire(s) indicated by flashing 'ZONES' LEDs.

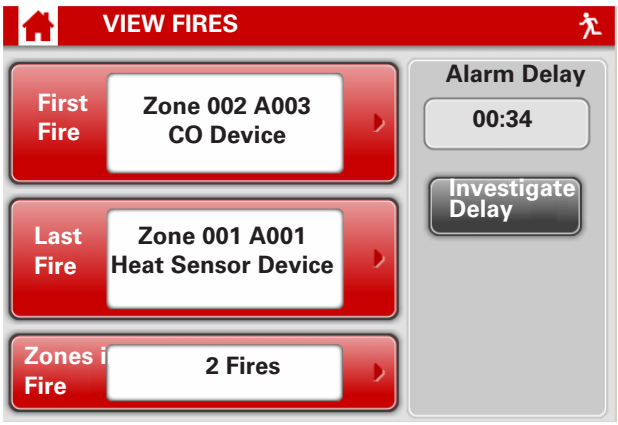


Fig. 2: Alarm Condition

More details of this screen are provided on p 14, here is a summary:

First Fire	First Fire' refers to the first zone to enter the fire state (where 'fire state' means having at least one device that has gone into alarm). The details shown are zone number and description, alarm point address and device details. Touch this to see a scrollable list of the device alarms in the zone.
Last Fire	'Last Fire' refers to the last zone to enter the fire state (useful for monitoring the spread of the fire). This is left blank if the same as 'First Fire'.
Alarm Delay	The time to elapse in seconds before the fire brigade signalling activates - see "Investigating Alarms" below.
Investigate Delay	Touch this to extend the 'Alarm Delay' - see "Investigating Alarms" below.

As well as this screen there will be additional indications, such as:

- The internal buzzer sounds continuously.
- The **FIRE** LED activates.
- For the zones that have a fire, the **ZONE** LEDs activate.

DANGER

In an alarm situation, inappropriate use of the panel functions may lead to death, serious injuries or damage to property.

This guide includes step by step instructions on carrying out operations on the panel. However you must ensure the operation is appropriate for the circumstances, according to the local site procedures.

1.2.1 Investigating Alarms

In a fire alarm there may be delay before the fire brigade signalling activates, giving you time to investigate, and cancel the signalling if the alarm is found to be a false one.

There will not be an investigate option in these circumstances:

- If the alarm system is not configured to have a delay.
- If night mode is active.
- If a call point was activated to trigger the alarm.
- If there is a sounder fault.

DANGER

When investigating an area of a building protected by a CO detector that has raised an alarm, there is a particular danger of fires not being detected.

This is because CO detectors are liable to raise an alarm earlier than other types of detector, and before the fire is visible.

You should take care in your investigation, and not clear an area as being safe until you are absolutely sure.

How to investigate an alarm

1 Activate the keyswitch or login – see "Logging In" on page 30.

2 Check the LED. If this is activated the signalling has already activated, so abandon this procedure.

3 

Optionally touch the button for silencing the panel's internal buzzer. If you need to re-activate the buzzer, touch the key again.

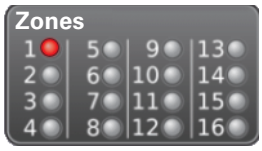
4  Optionally touch the button for silencing the sounders.

5 

Note the remaining 'Alarm Delay' time counting down. Before this reaches '0', touch the 'Investigate Delay' button.

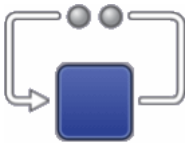
Then the 'Investigate Delay' button disappears and the 'Alarm Delay' shows a new countdown time before the signalling activates.

6 Determine the cause of the alarm and carry out the necessary measures. You have a limited time for this – the 'Alarm Delay' now counts down the remaining investigation time (updates in 5 second steps). Once this reaches 0 the signalling activates.



For the location of the alarm, use the Zones area of the Control Pad. The Zone numbers are allocated to different areas of the building, so zone 3 might be the boiler room, for example. Look for a key showing the allocations – perhaps as a wall chart near the panel. (This also applies to locating faults).

You can use the Control Pad for your investigation – to query events for example. In the menu screens the icon remains, as well as the other alarm indications.

 Touch this button to cycle through the alarms, showing more details.

7 If you determine the alarm is a false one, you can reset the control panel, as described below.

Once the emergency is over, reset the panel as follows

1 Activate the keyswitch or login – see "Logging In" on page 30.

2  Touch the button for silencing the sounders.

3  Touch the 'Reset' button.

If there are no alarms or other abnormal conditions, the control panel will return to a normal state.

1.3 Manual Evacuation

If necessary, you can trigger a fire alarm manually.

You might want to do this during a fire investigation, as described on page 7.

The results are the same as for an automatic alarm, for example the sounders and signalling activate, as described in "Fire Responses" on page 6. However for 'First Fire' and 'Last Fire' the indication will be 'Evacuate Button'. Also, Fire Brigade signalling will activate immediately (there is no 'investigate' option).

After the emergency, reset the control panel as described on Page 8.

How to trigger a fire alarm

1 Activate the keyswitch or login – see "Logging In" on page 30.

2 

Touch the Evacuate button.

3 In the confirmation dialog confirm or cancel the evacuation. Note the messages.

1.4 Fault Responses

You will probably need to resolve faults in consultation with a support engineer. There are details you can obtain, which you can use in a telephone consultation for example.

Faults are indicated by LEDs activating and screen details, as shown in Fig. 3.

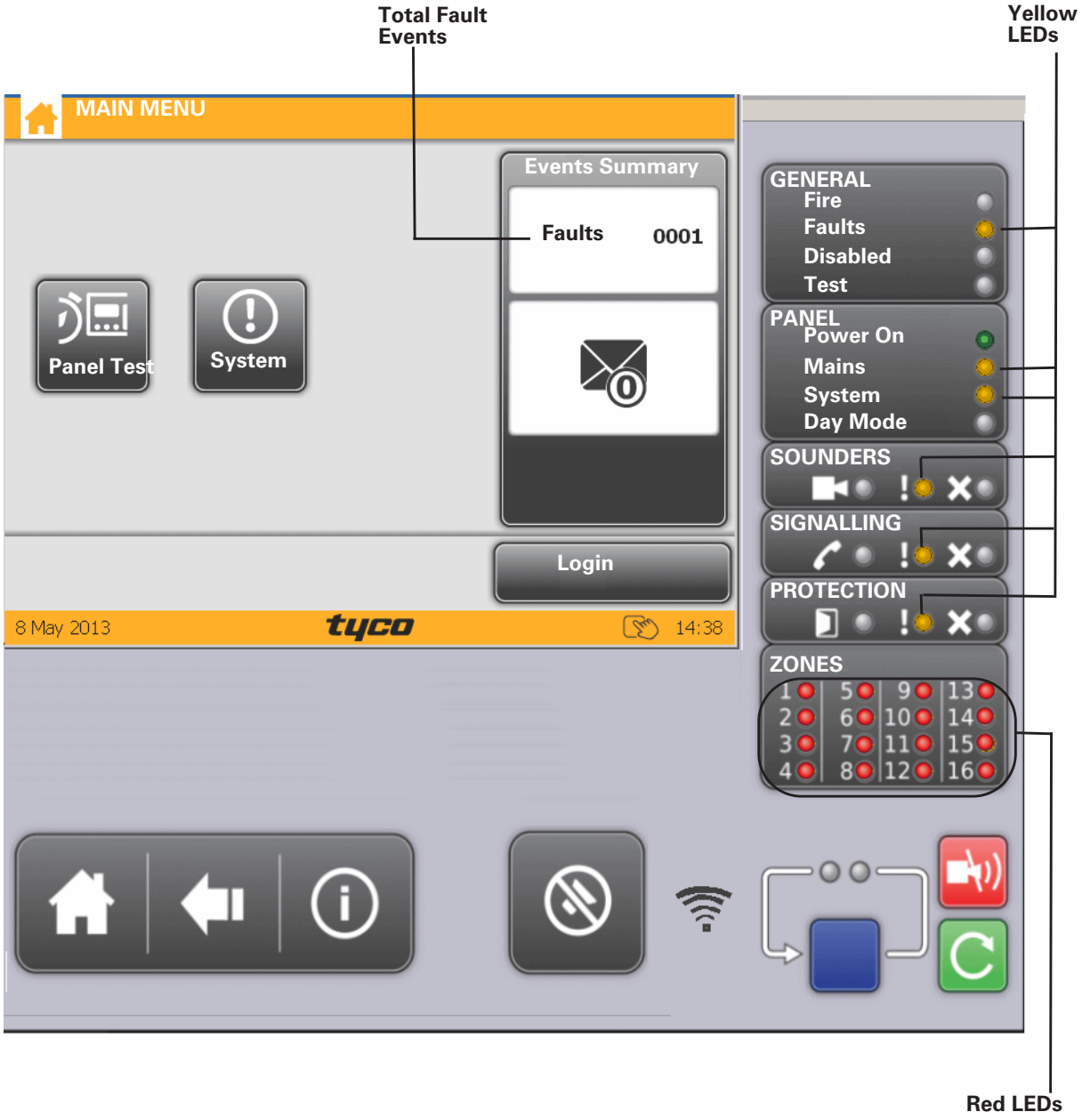


Fig. 3: Fault Indications

In addition the buzzer will sound. You can optionally silence this by touching the **Silence Buzzer** button (see p 6).

DANGER

It is dangerous to ignore faults. Faults must be investigated and resolved according to local site procedures.

To see details of the fault events, touch the area of the panel with the fault indication. For example, if the **Mains Fault** LED is activated, touch the **Panel** area of the Control Pad.

DANGER

A 'Mains Fault' must be resolved. The panel can run on backup batteries, but only for a limited time before it ceases to function.

You see a screen similar to this one:

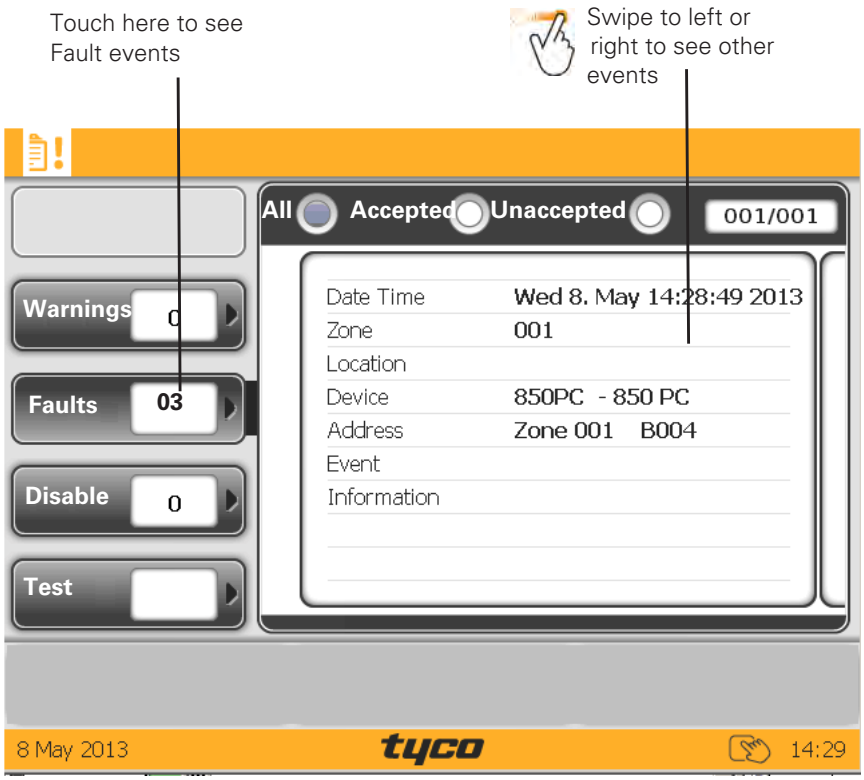


Fig. 4: Fault Events

There are more facilities for examining the 'Event Log', which you might use under the guidance of a support engineer.

1.4.1 Clearing the System Fault LED

Occasionally you may see the 'System Fault' yellow LED illuminated (see Fig. 3).

To clear this try a 'reset', as described in the section "Once the emergency is over, reset the panel as follows" on page 8.

1.5 Disabling

There are flexible options you can use to disable various aspects of panel functionality. Generally, this is to prevent false alarms. If you disable a detector for example, it is effectively be removed from the system and cannot trigger a fire alarm. Disabling is not permanent – devices can be re-enabled.

Disablements are sometimes indicated as in this example, where the sounders have been disabled:

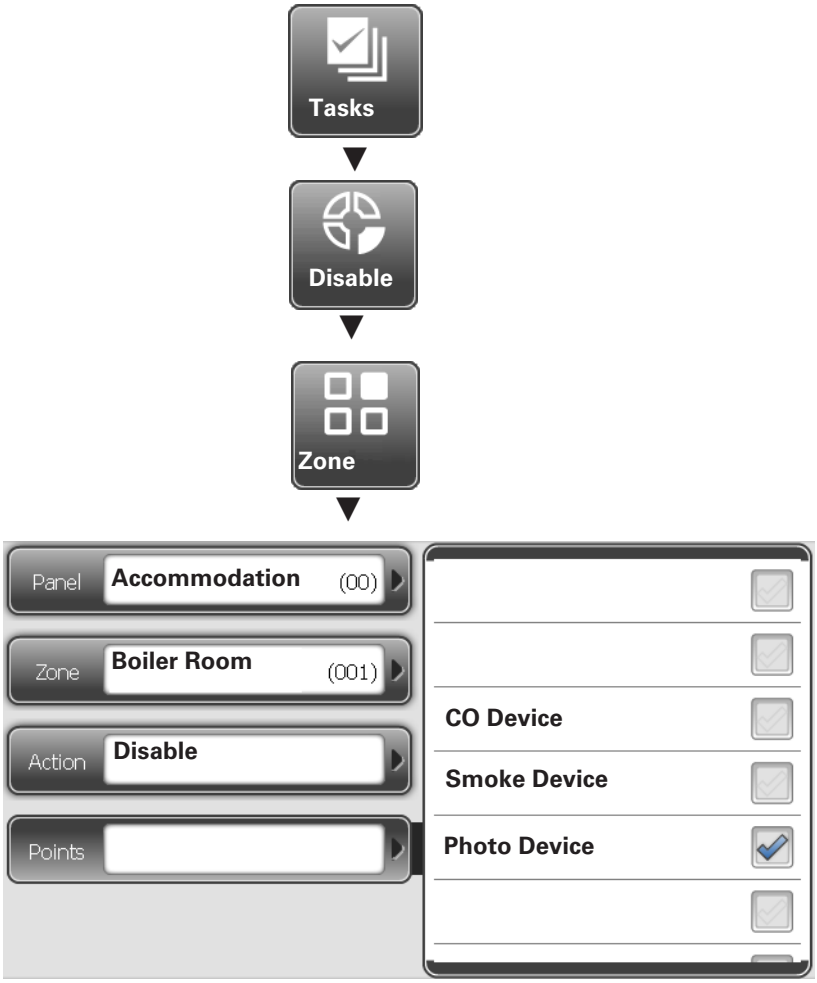


An example scenario is provided below. In this scenario some welding work is scheduled in the boiler room, and you want to make sure the smoke this produces does not trigger a false alarm.

As soon as possible afterwards, you should re-enable, using the 'Enable' action (opposite of 'Disable' below).

DANGER

Disabling points may lead to a fire being undetected and may break compliance with local regulations. You should only disable points with caution, and re-enable as soon as possible afterwards.



1.6 Switching between Day and Night Modes

Depending on the particular site, the required control panel behaviour may differ between day and night time operation, so the panel may have a 'Day Mode' and a 'Night Mode'.

Some key differences between the modes are as follows:

- In Night mode the "investigate delay" option is not available, as it is less likely anyone will be available to carry out the investigation (see "How to investigate an alarm" on page 7).
- In Day mode there may be a higher threshold before detectors alarm. This is because, for example, day-time activities may create dust, potentially triggering a false smoke alarm.

The 'Day Mode' LED activates to indicate the panel is in Day mode.

The control panel may switch automatically between Day and Night modes. You can also manually switch modes, as follows:

WARNING

Switching modes inappropriately can be dangerous.

For example switching to Day mode at night may lead to a delay in the fire brigade attending.

Only switch modes in accordance with local site procedures.

1 Activate the keyswitch or login – see "Logging In" on page 30.

2 

Touch the Day Night button.

1.7 Routine Maintenance and Checks

The complete fire alarm system, including the control panel, detectors and call points, must be periodically serviced to maintain correct functioning. The system must be periodically tested to detect any faults, and the faults rectified.

Local procedures need to be in place at the site to ensure this. These will often be in accordance with local standards. For example in the UK, this is covered under BS 5839-1.

2 Using the Functions

This section is a detailed reference on the panel functions, that you access using panel's touch-sensitive areas (these are mainly the buttons, but remember that other areas are also touch sensitive).

In general you will not need to use the functions. If you do it will probably be as directed from elsewhere in this guide, perhaps when you are disabling as covered in "Disabling" on page 10. Or you might use the functions to obtain further details to use in a support telephone call, for example.

For an example of how you typically use the menus, see the section "Using the Menus Example - Disabling a Point"on Page 31.

The table shows the sequences of button (and other area) touches that you can use, with explanations of what they do. Which of the sequences you can access depends on your login access level – the minimum required access level for each sequence is shown in the table (first column).

For some sequences the access is shown as "Key". For more details on this see the sections "Keyswitch Protected Functions" on page 29 and "Logging In" on page 30.

Some sequences have a unique number (eg 'Sq12') for cross referencing between them.

2.1 Function Details

Open Access 

This means there are no messages. This is replaced by a message, when there is one.

This appears in several places, such as the 'Events Summary' area.

Open Access 

See helpful information.

(For the other buttons in this bar – 'Home' and 'Back' – see p 6)

Also see:

Point of Contact

In case of emergency or fault contact John Smith on 4324

Open Access 



Use this to see a diagram showing a fire location. You may see one of several different diagrams (where each diagram shows a different fire location).

Open Access 



See explanatory captions for the touch pad controls.

Open Access Sq_1

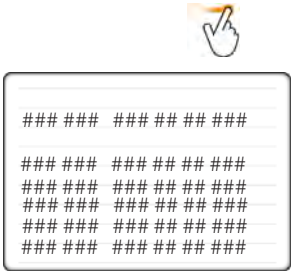


This button is showing the details of the zone containing the first 'fire' (first device alarm activation).The details include the zone name, device point address and device details.

Use to see all the fires of the first zone to have a fire.

Details include the alarm activation date/ time and point address.

Scrollable list.



View Fires See Sq_2

Zones in Fire See Sq_3

Disable See Sq_5

Open Access Sq_2



View Fires

Use to return to the main 'View Fires' screen showing both the 'First Fire' and 'Last Fire' buttons.

Open Access Sq_3

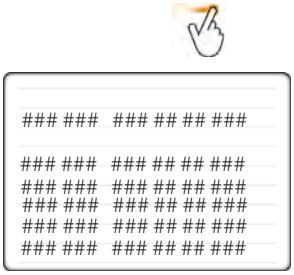


Zones in Fire

Use to list all the zones with a fire.

The list starts with the 'Last Fire' zone, followed by the 'First Fire' zone, then all the other zones.

The details include the zone name and the number of fires. Also included is the date and time the first fire in the zone. For details of all the fires see Sq_4.



Fires in Zone See Sq_4

Open Access

Sq_4

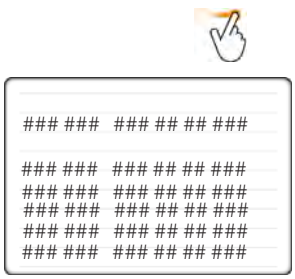


Zones in Fire

Fires in Zone

Use to list the fires in the zone you have just scrolled to in Sq_3. Details include the date and time, zone and device details.

Scrollable list:



Open Access



Zones in Fire

Fires in Zone

Zones in Fire

Use to returns to the 'zone details' screen (Sq_3).

Cust' 1

Sq_5

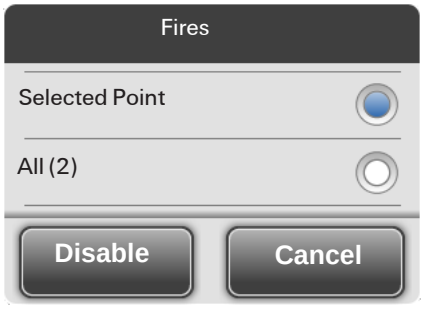


Disable

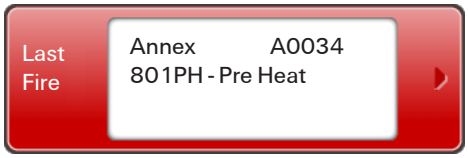
Use to disable the points of the fires listed in Sq_1 on page 14.

Use ("Selected Point") to disable the point of the fire you have scrolled to (in Sq_1).

Use ("All(2)" to disable the points of all fires (there are 2 in this example).



Open Access



This button is displaying the last fire to occur in the system that occurred in a zone previously without a fire (so, for example, the second fire to occur in a zone is never displayed here). The details include the zone name, device point address and device details.

Use to see all the fires of the zone containing the 'last fire'.

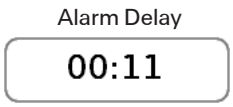
Otherwise, as for 'First Fire' above.

Open Access



Same as the 'Zones in Fire' button of Sq_3 on page 14. Note that the '2 Fires' of this example indicates there are 2 zones with a fire, rather than the total number of fires.

Not Applicable



After fire conditions is triggered, shows the remaining time before signalling triggers (if applicable). See "Investigating Alarms" on page 7.

Key

Panel must be in alarm



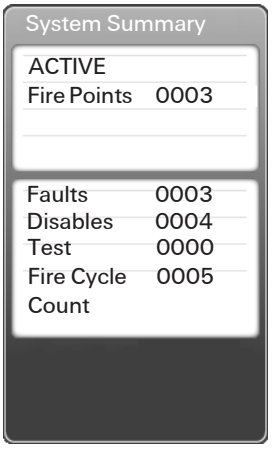
Use to investigate and cancel false alarms before fire brigade signalling activates (if applicable). More details in "Investigating Alarms" on page 7.

Open Access

Sq_6

(For more features see the 'protected' version, Sq_15 on p 21)



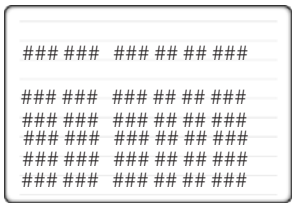




Set further filters ('blue dot' is selected)

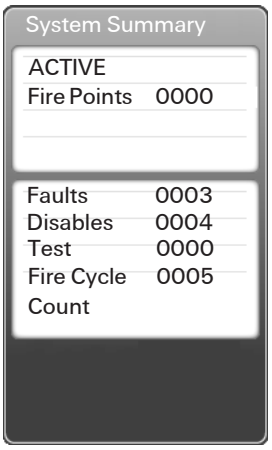
Scrollable list.





Open Access



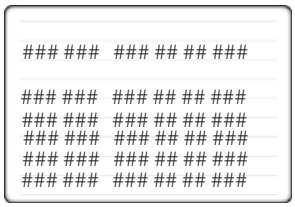




Set further filters ('blue dot' is selected)

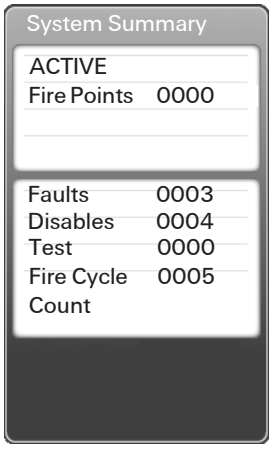
Scrollable list.





Open Access



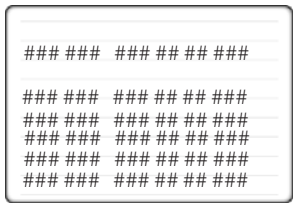


Use to see details of disabled points.



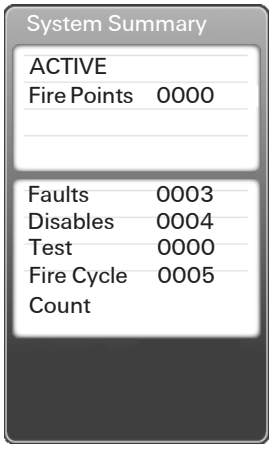
Scrollable list.





Open Access





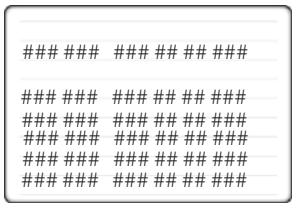
Use to see details of fault points.



Set further filters ('blue dot' is selected)

Scrollable list.



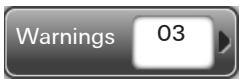


Open Access

Sq_7



Use to see a listing of Warning events. Warnings are possible problems that have not yet developed into a full fire alarm.



Set a further selection filter ('blue circle' category is included).

'First Knock' is where two or more devices must activate in a zone before an alarm is triggered, but only one has activated so far.

'Pre-Alarm' is where a device is signalling a lower level of alert than a full alarm.

All 

Or

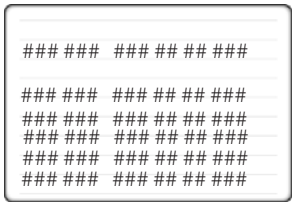
Pre-Alarm 

Or

First Knock 

Scrollable list.

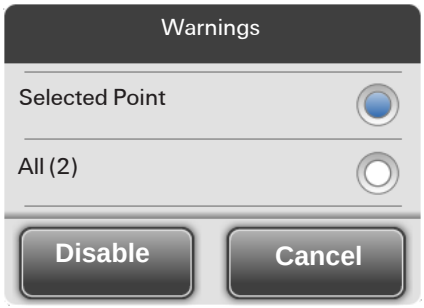




Cust' 1 *from Sq_7*

Disable

Use to disable points causing the Warnings – either the point you have scrolled to in Sq_7 (choose "Selected Point"), or choose "All". For re-enabling, see Sq_12.



Note; After the device is disabled the warning will clear, but the state of the device will remain the same. This means that on re-enabling (see Sq_12 on page 19), the device might generate a new Warning event.

Cust' 1 *from Sq_7*

Save

Use to save the displayed details onto a USB memory stick, in an ASCII text file. Ensure a stick is inserted. A dialog tells you the file name used.

Open Access Sq_8





Set a further selection filter ('blue circle' category is included)

More details in Sq_10.

All

Or

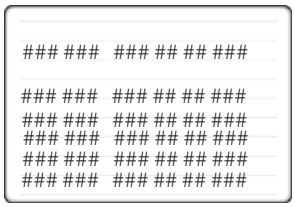
Accepted

Or

Unaccepted

Scrollable list.

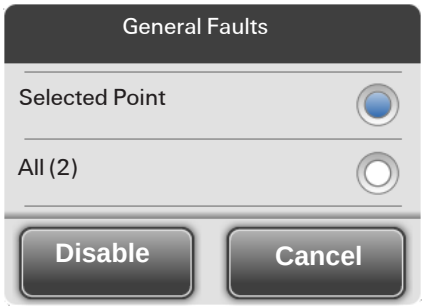




Cust' 1 *from Sq_8* Sq_9

Disable

Use to disable points causing the Faults – either the point you have scrolled to in Sq_8 (choose "Selected Point"), or choose "All". For re-enabling, see Sq_12.



Cust' 1 *from Sq_8*

Save

Use to save the displayed details onto a USB memory stick, in an ASCII text file. Ensure a stick is inserted. A dialog tells you the file name used.

Cust' 1
Sq_10

from Sq_8



Use to acknowledge that you are aware of the fault and are investigating it. See also Sq_8.

Open Access
Sq_11



Use to see a list of disablement events.



Set a further selection filter ('blue circle' category is included).
'Zones' is any zone that has a disabled point.

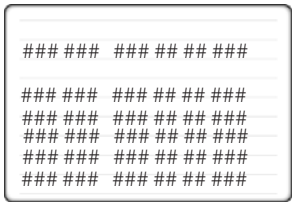
Points 

Or

Zones 

Scrollable list of disabled points, or zones with disabled points.





Points  Zones





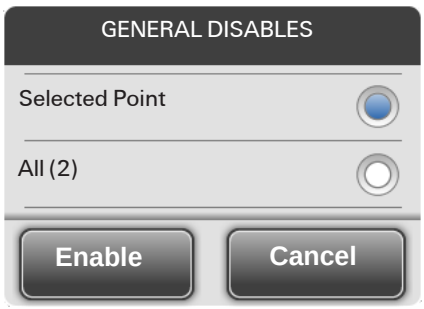


Cust' 1
Sq_12

from Sq_11



Use to enable points or zones – either the point or zone you have scrolled to in Sq_11 (choose "Selected Point/Zone"), or choose "All" (zones or points). When enabling a zone, all the disabled points in the zone are enabled.



Note that re-enabling a device may result in a new Fault event, for example. This would occur if the device was still in a fault state.

Cust' 1

from Sq_11



Use to save the displayed details onto a USB memory stick, in an ASCII text file. Ensure a stick is inserted. A dialog tells you the file name used.

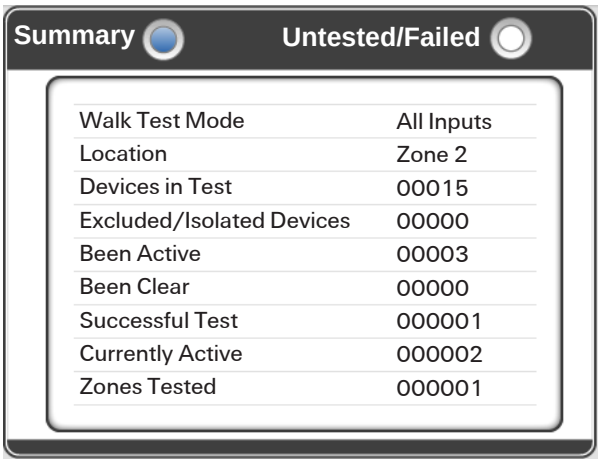
Cust' 1

Sq_13





See Sq_22 on page 27.





Switch all devices out of Walk Test mode

Open Access (if logged in use Sq_19 on page 24)



Use to start a number of tests, as listed below. As each test is announced on the screen check the expected results below, and if any do not occur, investigate and resolve the problem.

Testing display: First all the pixels should be white, then all the pixels should be black.

Testing LEDs: All the LEDs illuminate

Testing Buzzer: The panel's internal buzzer sounds.

Sq_14

Key



Use to examine the current status and history of the system, such as fault events.

Key



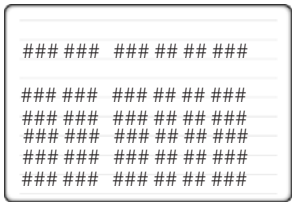


Select by:
Panel ►Zone ► Status ►Points
Eg.
Main Block ►Boiler Room ► Fires ► All



Scrollable list.





Use to save the displayed details onto a USB memory stick, in an ASCII text file. Ensure a stick is inserted. A dialog tells you the file name used.



Key



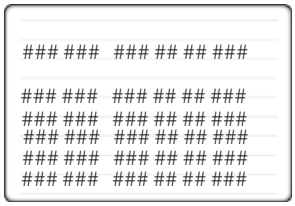


Select by:
Panel ►Start Date/Time < > End Date/Time
Eg.
Main Block ► 2103 Oct 21:00:00 < > Main Block 2103 Nov 21:00:00

View

Scrollable list.





Use to save the displayed details onto a USB memory stick, in an ASCII text file. Ensure a stick is inserted. A dialog tells you the file name used.

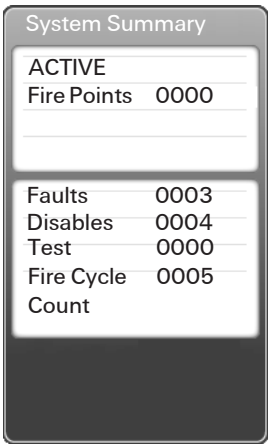
Save

Key
Sq_15



Use to check for disablements, faults etc. With high enough access you can operate on items (eg disable fault points).

Same as Sq_6 on page 16



Cust'7
Sq_16

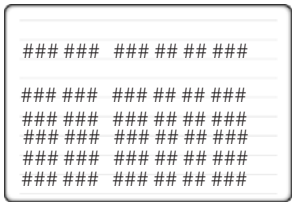




Select by:
Panel ►Zone ► One or more Point Types ► One or more Point Texts & Addresses
Eg.
Main Block ►Boiler Room ► Detectors ► 801H - Heat (A012)

View Status





Save

Disable

Cust' 7 *from Sq_16*



Use to disable the point you scrolled to in Sq_16

Cust' 7 *from Sq_16*



Use to save the displayed details onto a USB memory stick, in an ASCII text file (.TXT). Ensure a stick is inserted. A dialog tells you the file name used.

Key





See zones categorised by the state of their points (states such as 'Fire', and 'Fault')

Select by: Panel.

Key
Sq_17





Select a panel (this function does not work across the whole zone, only the portion of the zone hosted by the selected panel):



Or

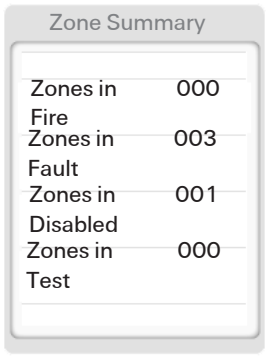


Or



For a zone to be 'in Fault' (for example) at least one of its points must be in the Fault state.









Number of zones with a point in state category shown in button.



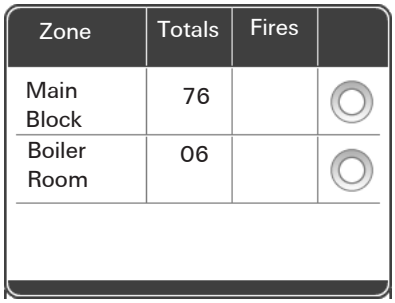
Or



Or



Eg ('Totals' is the number of configured points):







Select





See Sq_18



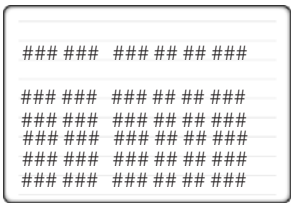
Use to save the displayed details onto a USB memory stick, in an ASCII text file. Ensure a stick is inserted. A dialog tells you the file name used.

Sq_18 *From Sq_17*



Scrollable list







Disables point scrolled to in list

/



(Only when viewing 'Disables'.) Enables point scrolled to in list



Use to save the displayed details onto a USB memory stick, in an ASCII text file (.TXT). Ensure a stick is inserted. A dialog tells you the file name used.

Key





Use to see reports on the network configuration and status.

Shows number of nodes 'Configured', 'Not Configured' and 'Not Responding'.

Select the network type.

Key







Use to see more details on the selected network.

Key





Use to review various settings relating to the detailed system operation.

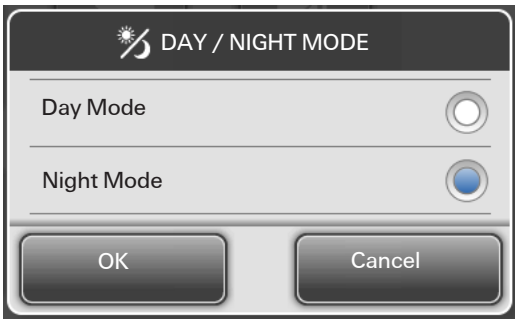
These settings can only be changed by service personnel, with higher level access levels.

Although normal users cannot change these settings, it may be useful to know them, perhaps for use in a telephone consultation with service personnel.

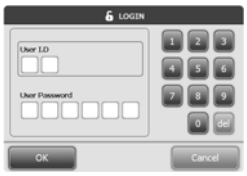
Key
Or see 'Tasks' below.



Use to switch between Day and Night modes. Also see p 11.







Required before using most of the panel functions. Your login 'access level' determines which menu items are available. More in "Logging In" on page 30.

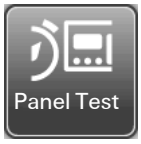
Cust' 1



Use to perform operations such as setting the time and date.

Cust' 1
Sq_19





See Sq_14 on page 20.

Cust' 6





Select by:
Panel
eg:
Reception



Use to activate the custom task. Details are outside the scope of this guide as they will vary between sites.

Cust' 6





Select by:
Panel
eg:
Reception



Use to de-activate the custom task. Details are outside the scope of this guide as they will vary between sites.

Cust' 1





Use to switch between Day and Night modes. Also see p 11.



Cust' 6





Use to suspend functionality. For example disable detectors when you know smoke will be produced, to prevent false alarms. More on p 10.

Also use to reinstate (Enable) functionality.

As shown in the sequences below, points are selected by panel and zone, then further selection filters, such as device type (eg all 801H detectors) or function (eg all callpoints). Points are also selected by panel and zone.

Then confirm using the buttons:



/



Cust' 6







Select by:
Panel ►Zone ► Action ► Inputs and/or Outputs ► Point Addresses (or 'All').

Eg
Main Block ►Boiler Room ► Disable ► Inputs ► 801H (A005).

Cust' 6







Select by:
Panel ►Zone ► Status(es) ► Action ► Inputs and/or Outputs ► Point Type.

Eg
Main Block ►Boiler Room ► Faults & Force ► Disable ► Inputs ► 801H (A005).

Cust' 6







Select by:
Panel ►Zone ► Function(s) ► Action ► Inputs and/or Outputs ► Point Address(es).

Eg. Main Block ►Boiler Room ► Callpoints ► Disable ► Inputs ► Callpoint Device (A0011) & Callpoint Device (A004).

Cust' 6







Select by:
Panel ►Zone ► Device Type(es) ► Action ► Inputs and/or Outputs ► Point Address(es)

Eg.
Main Block ►Boiler Room ► 850 PH ► Disable ► Inputs ► A006

Cust' 6







Select by:
Panel ►Location ► Action ► Inputs and/or Outputs ► Point Address.

Eg.
Main Block ►Loop ► Disable ► Inputs ► A ► 056.

Cust' 1



Use for routine servicing and detailed settings.

Cust' 1





Use to make settings such as the date and time and user-defined text.

Cust' 1



Use to set the date and time of the panel. This must be done individually for each panel on the network.

Cust' 7



See a report on devices at, or near, the end of their service life.

Cust' 7



Use to test devices. In Walk Test mode you can activate devices to check their operation without triggering a fire alarm. For example you place a detector into Walk Test mode, apply smoke and check that it has activated correctly. Once all devices are checked and OK you leave Walk Test mode to return to normal operation.

In the next few sequences you choose the scope of the test (which of the devices will be placed in Walk Test – you do not have to place all devices in Walk Test).

Then, in Sq_22 below, you start the test.

DANGER: While Walk Test mode is active, fires may go undetected. This is because the normal alarm response to device activations is suppressed. You should use Walk Test with caution, and for as short a time as possible.

WARNING: There is a danger of accidentally triggering an alarm during a walk test. For example if you only placed detectors in Walk Test mode, then activating a callpoint will trigger an alarm.

Note the indications and message:



Cust' 7
Sq_20



Select devices to be placed in Walk Test, by:

Panel ►Device Type ► Loop ►Multi-sensor.

Eg.

Main Block ►Detectors ► A ► Full

Notes:

Device Type: Choose from 'Input', 'Detectors', 'Callpoints', 'Alarm Inputs' and 'Sounders'. Use 'Alarm Inputs' to specify both detectors and callpoints. Use 'Input' to specify detectors, call points and any other configured device such as door open/closed monitor devices.

Loop: Any of the loops or 'All' loops can be selected.

Multi-sensor: This setting relates to devices such as combined smoke and heat detectors. For such a device you would select 'Full' if you wanted to apply both smoke and heat, and you only wanted the device to pass as OK if both sensors activated. You would select 'Part' if you wanted the device to pass as OK if either sensor or both activated.

Cust' 7
Sq_21







Select devices to be placed into Walk Test, by:
Panel ►Zone ► Type ►Multi-sensor.
Eg.
Main Block ►Boiler Room ►Detectors ► Full
See also the notes in Sq_20.

Cust' 7
Sq_22

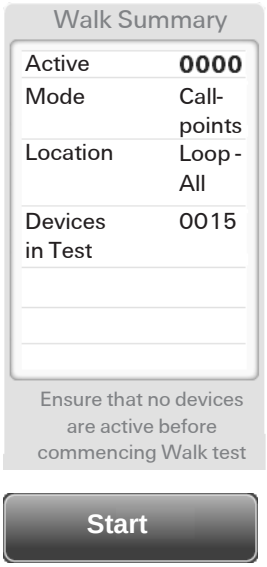




Sequence for selecting scope and device types above (Sq_21 or Sq_22)

Button allows you to start the walk test.

Note the indications and summary of the settings:



Cust' 7
Sq_23





Sequence for selecting scope and device types above (Sq_21 or Sq_22)

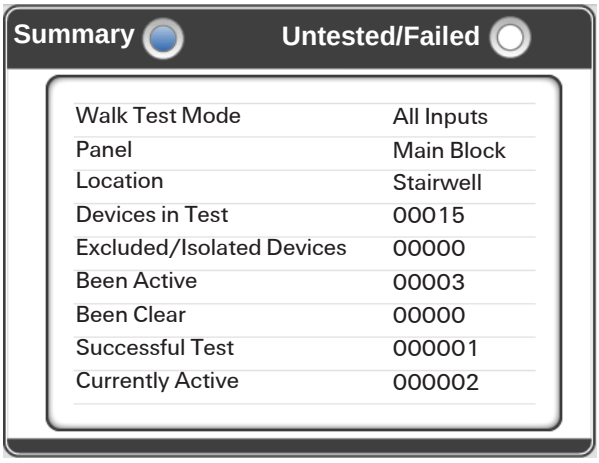
If the 'Start' button is not visible, there may be no devices in the system of the type you have specified.

If you see a 'Walktest in progress...' message, use Sq_13.





See Sq_24





Touch this to switch all devices back from Walk Test to normal mode. To prevent an accidental alarm this is not available if any devices are active ('Currently Active' is not '0'). You might have forgotten to re-set a callpoint glass, for example. If you cannot see this button use Sq_13.

Walk Test Mode

A reminder of your settings.

Panel

The panel you specified.

Location

The zone containing the devices in Walk Test. Displays '-' if there are multiple zones.

Device in Test

Number of devices included in the scope of your settings.

Excluded/Isolated Devices

Number of devices that would have been in the scope of your settings to be tested, but are disabled.

Been Active

Number of devices that have been active since the test was started. This should match 'Successful Test', (will not match if devices were already active on starting).

Been Clear

Number of devices that have been in the clear state (that is the "not active" state) since the test was started. This will most probably match the "Selected" value, as all devices will probably start in the clear state. (You are unlikely to start the Walk Test with devices active.)

Successful

Number of devices that have switched from the "clear" to the "active" states. This will increase as you test devices, and the test is successful. Again, this should match "Been Active" (will not match if you started with a device already active). See also Sq_24.

Currently Active

Devices currently active. For example a callpoint under test will appear here until you replace the break-glass to the normal position.

Zones Tested

Number of zones with a device in Walk Test.

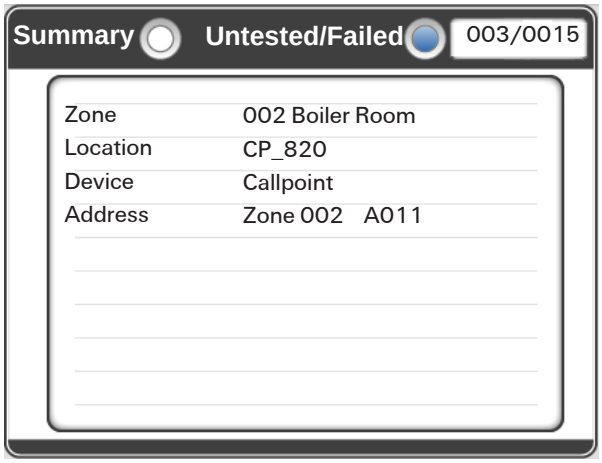
To summarize, if all the devices pass, the Selected and Successful values will be the same, and they will also most probably match the Been Active and Been Clear values.

Sq_24 ...from Sq_23...

Scrollable list.



See Sq_23



Devices disappear from this list when you test them, if the test is successful.

If a device remains in this list after you have tested it, it has failed and you should investigate.

In AUTOMATIC mode, devices will disappear as their self-test is triggered by the control panel (and this is successful).

Cust' 1



See Page 20.

Key



Use to manually trigger a fire alarm. See p 8.

Cust' 1



Use this to control all sounders across the site (system). When 'on', touch to switch to 'off'. This silences any active sounders and suppresses future sounder activations. Touch again to switch back to 'on'. This re-activates any existing activations, and allows future activations.

Key



Use to logout after completing your work at the panel.

2.2 Keyswitch Protected Functions

In the 'function details' above, some of the functions have an access level indicated as "Key". For an example see "Switch between Day and Night modes" on page 24.

How you can access these depends on whether your panel is configured to use a keyswitch.

2.2.1 Panels Using a Keyswitch

To access the keyswitch-protected functions insert the keyswitch into the hole at the bottom-right of the control pad and turn it 90° clockwise.

The hole for the keyswitch is in the rubber USB socket flap. (If the hole is not present the panel will not be configured to use a keyswitch.)

To check for successful activation, look for the keyswitch protected functions appearing – for example the button for Day/Night mode switching should appear on the Home screen (see p 24). If this is not present the panel will not be configured to use the keyswitch (even though physically supported).

If you want to use the login-protected functions, you will need to activate the keyswitch before you can log in.

After logging in you might find the buttons re-arranged. For example the keyswitch-protected Day/Night switching button is on the Home screen, as detailed on p 24, but after logging in the button moves to the Tasks sub-menu, as detailed on p 24.

CAUTION

After use, do not forget to de-activate the keyswitch and remove it.

This will prevent unauthorised access to the panel.

2.2.2 Panels not Using a Keyswitch

It could be that the panel is not configured to use its keyswitch. In this case:

- There will probably be no keyswitch hole.
- You will have to login to access the keyswitch-protected functions (as you will need to do for all the protected functions).

  Now for information in this guide, rather than referring to the function details with a keyswitch-protection indicator ("Key"), refer to the equivalent details with one of the normal access level indicators. For example the keyswitch-protected Day/Night switching button is shown as being on the Home screen (see p 24), but the Customer 1' protected button is detailed within the 'Tasks' sub-menu (see p 24).

  For all the keyswitch-protected functions the minimum access level is "Cust' 1". (As this is the lowest access level, all users can use the keyswitch protected functions.)

2.3 Logging In

In the "Function Details" section above most panel functions have an indicated minimum 'access level' that the logged in user must have to be able to use them. Below are details of logging in.

Login as follows:

1 Check whether the function you want to use is keyswitch protected – you might not need to log in. See "Keyswitch Protected Functions" above.

2  Check whether this symbol is shown at the top of the display. This indicates a user is already logged in, and only one user can be logged in at a time – see the 'Logout' button below.

3  Make sure that you are at a suitable screen for login – use the Home key for example.



You should now see the Login button.



If you see the Logout button, rather than the 'Login' button, someone is already logged in. Use this button if you want to log them out.

4 As appropriate, go to the section "Contactless (RFID card) Login" or "Manual Login" below.

After completing your work at the panel, make sure to touch the Logout key.

You are automatically logged out after a period of inactivity.

2.3.1 Contactless (RFID card) Login

If you have a contactless (RFID) card:

1 Follow the "Logging In" section above.

2  Offer up the RFID card to the panel, near the 'wireless' symbol. You will automatically be logged in.

3  You might now need to follow the prompt to activate the keyswitch, displayed on the panel screen. After doing this offer up the card again.

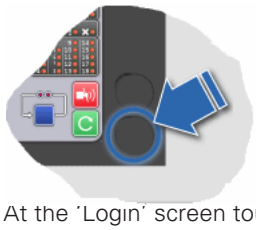
2.3.2 Manual Login

To manually log in:

1 Follow the "Logging In" section above.

2 

Touch the Login button.

3  You might now need to follow the prompt to activate the keyswitch, displayed on the panel screen.

4 At the 'Login' screen touch the number buttons to enter your 'User I.D' and your 'User Password'.

2.4 Valid Values

When using the menus you will be entering various values, such as point numbers.

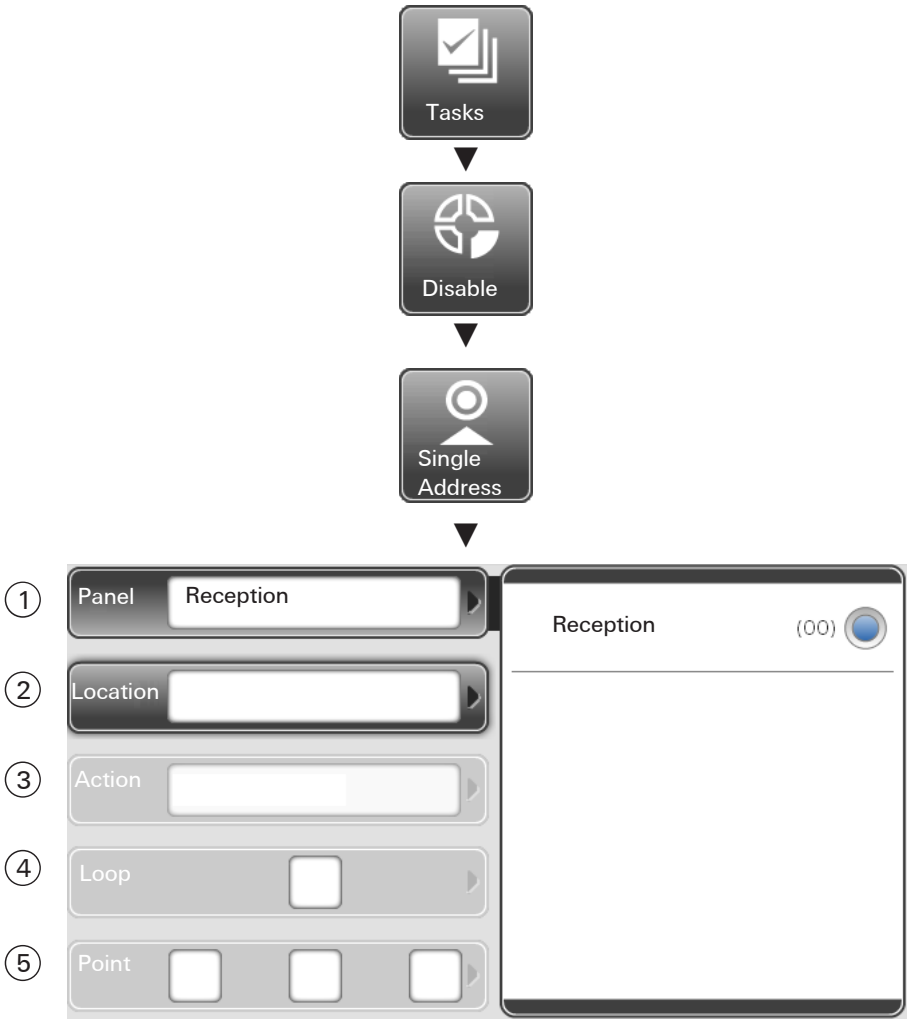
In general, you can set these to any value, including invalid values. If you make an invalid setting there will be an audible or on screen warning.

As an example if you enter a loop address of "A132", and a device has not been configured into this address, you will see an "Invalid entry!" message.

If you are in a position to use a particular option, you will probably know which are the valid values, that you will using.

2.5 Using the Menus Example - Disabling a Point

Below is an example of how you typically use the menus – describing how you would disable the detector at loop point 'A1'.



1 'Reception' is the only panel in this scenario, so it is automatically selected. (Otherwise touch 'Panel' on the left. Touch to select the particular panel on the right.)

2 Touch 'Location' on the left. Touch 'Loop' on the right.

3 Touch 'Action' on the left. Touch 'Disable' and 'Inputs' on the right.

4 Touch 'Loop' on the left. Touch 'A' on the right, touch 'OK'.

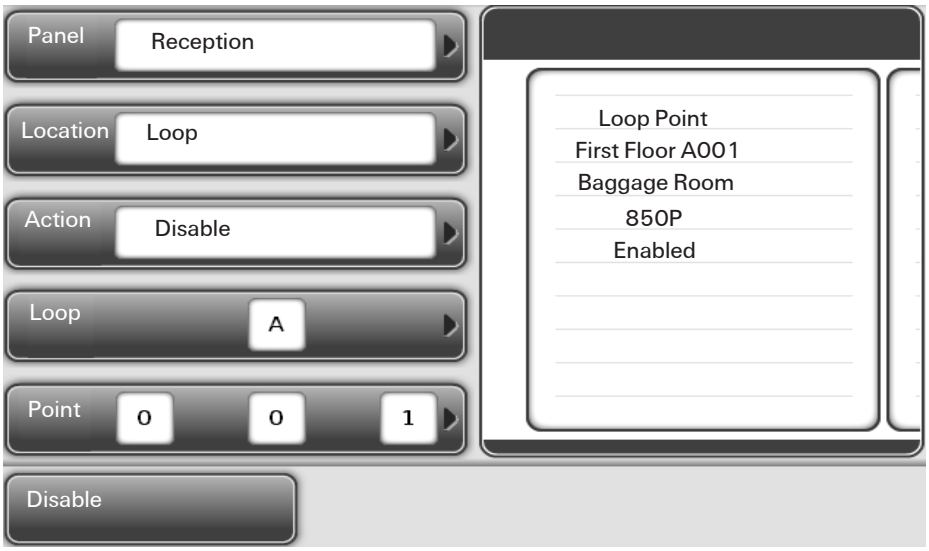


For long lists touch within the list and drag up or down to scroll. There is an indication of the portion of the list you are viewing.

5 Touch ‘Point’ on the left. Touch ‘0’ then ‘0’ then ‘1’ on the right, touch ‘OK’.

(In the case of mistakes, touch an earlier setting on the left to change it.)

You now see:



6 Touch ‘Disable’.

3 Routine Checks

3.1 General

It is recommended that installation is checked on a regular basis by a responsible member of staff, as described below.

This may be a requirement under local regulations or standards, such as BS 5839 Part 1.

3.2 Daily Checks

How to do a daily check

1 Ensure the front panel of the fire alarm control panel is indicating a normal condition (i.e. no alarm or fault LEDs are lit and the LCD is displaying the date and time).

If the panel is not indicating a normal condition record the condition in the log book and take any necessary action.

2 Check that any fault recorded on the previous day has received attention.

3.3 Weekly Checks

How to do a weekly check

1 If necessary, clean the front panel of the fire alarm control panel with a suitable cleansing agent.

CAUTION: To avoid unnecessary evacuation, warn all personnel that the sounders are about to be tested.

2 Activate a device (either a callpoint or detector).

3 Check that the system responds as follows:

- The control panel's buzzer sounds in a continuous tone.
- The (GENERAL) **FIRE** LED on the control panel front lights.
- The appropriate red **ZONE STATUS** LED flashes.
- The sounders operate.
- The LCD display shows the location of the alarm.

4 Record the device used to initiate the test in the site log book and reset the fire alarm control panel.

5 Check the condition of the printout on any printers attached to the system and replace the ribbon if it is becoming feint.

6 Ensure that each printer has an adequate supply of paper.

Record any defect in the log book and take the appropriate action to remedy this.

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Further information about Tyco can be found on the Internet at www.tycoemea.com

Company stamp

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mzx TECHNOLOGY

PROFILE Fire Alarm Control Panels

From Firmware version 24

Service Guide

120.515.186_PROFILE-P-S

Doc. version 1.0
25. February 2014

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1 Operator Instructions

This section focuses on the service-related aspects of using the control panel. For information on the normal daily use of the panel, such as walk testing and fire alarm responses, refer to the panel user guide.

1.1 Controls Introduction

You interact with the system using a touch sensitive control pad shown in Fig. 1. There are buttons you can touch, and LED indicators. In general the LED indicators signal abnormal conditions (such as 'Fault').

It is not just buttons that are touch sensitive – for example you can touch the 'General' area (darker grey) to see a summary of events.



Fig. 1: Control Pad

1.2 Fault Responses

Faults are indicated by LEDs activating and screen details, as shown in Fig. 2.



Fig. 2: Fault Indications

In addition the buzzer will sound. You can optionally silence this by touching the **Silence Buzzer** button (above).

DANGER

It is dangerous to ignore faults. Faults must be investigated and resolved according to local site procedures.

To see details of the fault events, touch the area of the panel with the fault indication. For example, if the **Mains Fault** LED is activated, touch the **Panel** area of the Control Pad.

DANGER

A 'Mains Fault' must be resolved. The panel can run on backup batteries, but only for a limited time before it ceases to function.

You see a screen similar to this one:

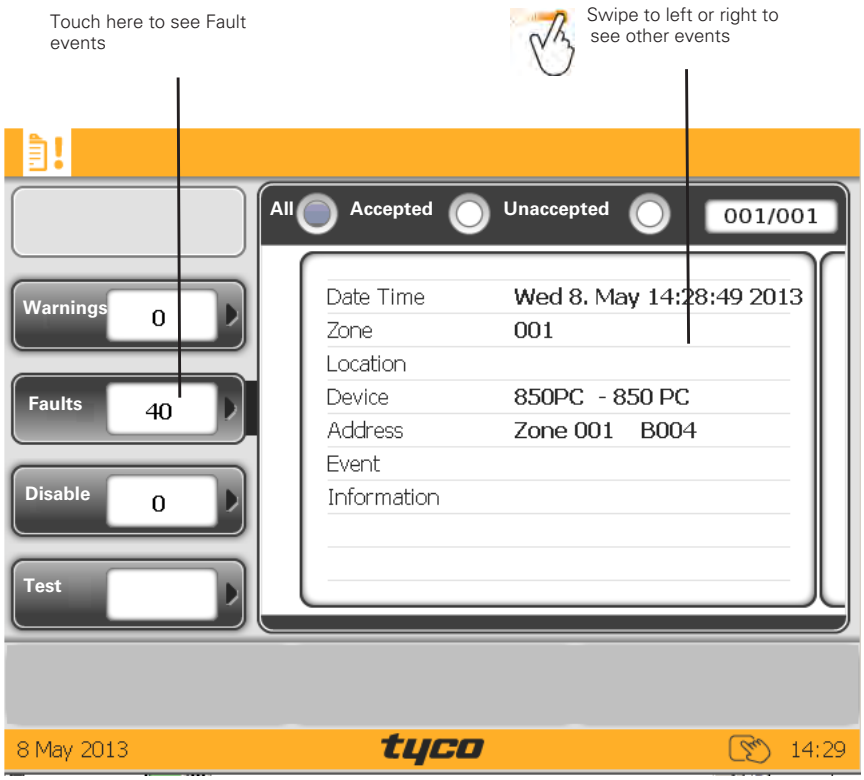


Fig. 3: Fault Events

There are more facilities for examining the 'Event Log'.

1.2.1 Clearing the System Fault LED

Occasionally you may see the 'System Fault' yellow LED illuminated (see Fig. 2).

To clear this try a 'fire reset', as described in the PROFILE Panels' User Guide.

2 Using the Functions

This section is a detailed reference on the panel functions, that you access using panel's touch-sensitive areas (these are mainly the icons, but remember that other areas are also touch sensitive).

This section is a detailed reference on the panel functions, that you access using panel's touch-sensitive areas (these are mainly the icons, but remember that other areas are also touch sensitive).

For an example of how you typically use the menus, see the section "Using the Menus Example - Disabling a Point"on Page 17.

The table shows the sequences of icons you can use, with explanations of what they do. What sequences you can use depends on your login access level – the minimum required access level is shown in the table (first column). Some sequences have a unique number (eg Sq12) for cross referencing between them.

The table only includes the sequences with an access level of Engineer 1 or higher (unless a lower level sequence is required for clarity). For the 'normal user' levels, lower than this, see the panel's user guide.

				Required before using most of the panel functions. Your login 'access level' determines which menu items are available. More in "Logging In" on page 15
Cust' 1				Use to perform operations such as setting the time and date.
Eng' 1				Use the 'force' functions to override normal device behaviour. For example forcing a sounder on will cause it to sound. Forcing a detector on will cause the panel to react as if the device had actually alarmed. Some notes on the settings: Force ON Remains in force until 'Unforce' is used on the point. Unforce Cancels a 'Force ON' Force OFF Prevents the device activating when it normally would. For example a forced off sounder would not sound when the panel went into alarm.
Eng' 1				Select by: Panel ►Zone ► Inputs or Outputs ► Action ► Point Addresses (or 'All'). For example: Main Block ►Boiler Room ► Inputs ► Force ON ► 801H (A005).
Eng' 1				Select by: Panel ►Zone ► Points' Status ► Inputs or Outputs ► Action ► Point Addresses (or 'All'). For example: Main Block ►Boiler Room ► (*points in*) Faults ► Force OFF ► All.

Eng' 1



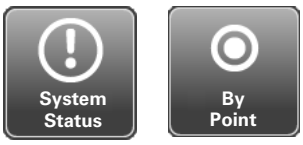
Select by:
Panel ►Location (Loop/RBus/Local I/O) ► Inputs or Outputs ► Action ► Loop Address ► Point Address.
For example:
Main Block ►Loop ► Force ON ► Inputs ► A ► 056.

Eng' 1



Use to discover the status of a point, where 'status' might be 'fault' or 'disabled' and so on.

Eng' 1

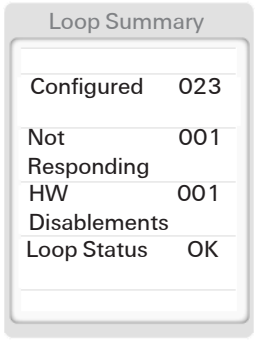


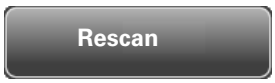
Select by:
Panel ►Location (Loop/RBus/Local I/O) ► Loop Address ► Point Address.
For example:
Main Block ►Loop ► A ► 056.

Eng' 1
Sq_1



Note the loop details.
('Loop Status' may show 'open circuit' or 'short circuit' if there is a problem.)







Eng' 1 *from Sq_1*



Use to refresh the displayed data.

Eng' 1 Sq_2 *from Sq_1*

View

Use to get more detailed information.

Left/Right Scan	Detected	
Detected from Both Sides	23	
Detected from Left Side	23	
Detected from Right Side	23	

All 23 See all points

Responding 23 Only see responding points

No Response 0 Only see non-responding points (not detected from either the right or left)

HW Isolators 0 Only see HW Isolators

Disable On See Sq_3

List View See Sq_4

Eng' 1 Sq_3 *From Sq_2*

Disable On

Use to disable all the points associated with the selected (blue dot) row. For example disable all the points 'Detected from Left Side'.

Eng' 1 Sq_4 *From Sq_2*

List View

For each point shows a tick for detected or cross for not detected.

	Left	Right	Both	
00 A001	✓	✓	✓	
00 A002	✓	✗	✗	
00 A003	✓	✓	✓	

Eng' 1 Sq_5 *From Sq_2*

List View **Summary View** Goes back to Sq_2.

Eng' 1
Sq_6





Select by:
Panel
Eg:
Main Block
Use this to see a quick status overview of the commissioning facilities of the panel.
The status will be either 'Active' or 'Not Active'. So for example you might see:



For details of all the buttons see below

From Sq_6



Select by:
Panel ►Loop
Eg:
Main Block
► A



Use this to shut down loop power and signalling on individual loops. This allows maintenance to be carried out on the loop without having to shut down the complete control panel, for example.

From Sq_6



Select Panel



Use this to re-start shut down loops.



From Sq_6



Select by:
Panel ►Loop ►Point
Eg:
Main Block
►A ► 033



Use this to limit the polling of devices to your single specified device. This can be useful, for example, in identifying detectors. You would specify the detector you want to identify, and this detector will then be the only one that has a flashing LED. (All other detectors will have an inactive LED.)

DANGER: Using Single Device Poll may lead to a failure or delay in detecting fires. This is because detectors will be disabled by using the option. Use with caution, and only for as short a time as possible.

You might see a 'No Success' message, for example if the device is not responding. In this case Single Device Polling mode is not activated.

From Sq_6



Select by:
Panel ►Loop ►Point
Eg:
Main Block
►A ► 033



Use this to end polling of the device.

From Sq_6



Select by:
Loop
Eg:
A



Use this to enable IR communications between all devices on the specified loop and the 850 EMT engineering management tool.

You are recommended to first disable the sounders on the loop to prevent accidental activation.

A subsequent indication shows how many devices are infra-red capable, and so entered IR mode.

From Sq_6	**IR Service Mode**	Active	Select by: Panel ►Loop ►Point Eg: Main Block ►A ► 033	Exit IR Mode	Use this to exit IR mode.
From Sq_6	**Fast Logic Mode**	Not Active			Enable Fast Logic Mode to speed up the testing of devices – potential delays in the control panel response to your testing are eliminated. These delays would be caused by the control panel analysing past device behaviour, to confirm actual fire conditions. For example you apply smoke to a detector but there is no immediate response, as panel dismisses the sudden change in detector output as being unrealistic. You would have to keep applying smoke until the panel was sure there was 'real fire'.
From Sq_6	**Rate of Rise Processing**	Not Active			Use this to enable Rate of Rise processing.
From Sq_6	**Fast Fault Mode**	Not Active			Use this to reduce the delay between faults occurring and being reported. You could use this mode to speed up testing – you might be removing detectors and checking the panel registers this as a "no response" fault, for example. Normally faults must be present for one minute before they are reported. This is to prevent spurious faults, caused by electrical noise on the addressable loop for example. In "Fast Fault" faults are reported immediately. That is on the first detector poll that discovers them (or within three polls for certain devices).
From Sq_6	**Detector Power Up**	Not Active			If this mode is enabled when detectors power up (when they are plugged back in after being removed for example) this is logged in the event log.
From Sq_6	**Noisy Device**	Not Active			Detectors showing large variations in values can trigger a "noisy device" fault indication. Enable this Noisy Device option to suppress these fault indications.
From Sq_6	**RSM Test Mode**	Not Active			This option may have been disabled in the configuration, and so may not be present.) Certain sounders feature 'Reflective Sound Monitoring'. The sounder has a detection system that monitors the sounder's own output. If there is no detected output when the sounder is activated, this results in a fault being recorded. RSM operates whenever the sounder is activated – during an actual alarm or a sounder test. The exception is when the sounder is set to a lower volume setting, and RSM is disabled. To ensure that RSM operates when testing all sounders, including the 'lower volume ones', activate this RSM Test Mode. Note that for an RSM fault will not be registered if: ■ The sounder does not sound continuously for at least 15 seconds. ■ In the system configuration the sounder is not set to one of the "Continuous" modes. ■ In the system configuration the sounder is set to 'pulsed'.

From Sq_6	**Inhibit no Response**	Not Active	Activate this Inhibit No Response (Inhibit No Response) mode to suppress unwanted "no response" faults. For example you may have added a new point, but not yet fitted a corresponding detector, and you want to avoid a fault condition. When "Inhibited", a non-responding detector will only result in a fault if it has previously produced a response. If a point has a non-responding detector, and this detector has never responded, this will not result in a fault.
From Sq_6	**Inhibit Download**	Not Active	Enable this to prevent configurations being downloaded onto the panel.
From Sq_6	**Quiescent Print Paused**	Not Active	Select this to pause background printing.
From Sq_6	**Test Equipment**	Not Active	No 'test equipment' is connected to the panel (see below). Note that this is only an indication – it is not a button you can touch.
From Sq_6	**Test Equipment**	Active	Test equipment is connected to the panel, such as a PC running MX Checker. Note that this is only an indication – it is not a button you can touch.
From Sq_6	**Commissioning Access Level**	Not Active	A user with 'Commissioning' access level is not logged on to the panel. Note that this is only an indication – it is not a button you can touch.
From Sq_6	**IR Service Mode**	Active	There is a user with 'Commissioning' access level logged on to the panel. Note that this is only an indication – it is not a button you can touch.

Eng' 2					Use to work with points. For example add points (perhaps a new detector), or change the point text.
Eng' 2					Use this to change details of the point, such as the description, device type and use.
Eng' 2					Use this to configure point labels.
Eng' 2					Use this to configure a new point (address), so that you can add a new device to the loop, for example.

Eng' 2









Use this to tell the panel to learn for itself what devices are connected, and add them to the configuration.

Select by:
Panel ►Zone ► Loop Address ► Overwrite/ Merge Configuration

For example:
Main Block ►Main Block ► Boiler Room ► A ► Merge Configuration.

Note:

- 'Overwrite Configuration' firstly deletes the existing configuration, then adds the newly discovered devices to the configuration.
- 'Merge Configuration' only adds newly discovered devices to the configuration.

Cust' 7





Use to perform service type operations such as calibrations.

Cust' 7







Select by:
Panel ► Loop Address(es) ► All points
Eg:
Main Block ► Loop Address(es) ► Point(s)

Use this to calibrate a conventional loop using diode bases, that is interfaced through a DDM800 module.

If a detector is removed from such a loop, this can be sensed through the resulting change in circuit parameters.

The calibration is needed to establish the initial correct circuit parameters against which the change can be detected.

The calibration is needed on initial commissioning, or after changes that will affect the parameters, such as a change to the loop wiring, or a change to the fitted detectors.

Cust' 7







Use this if the panel operation has become abnormal.

Cust' 7







Use this to copy a configuration from a USB flash drive. For details refer to the PROFILE panel commissioning instructions.

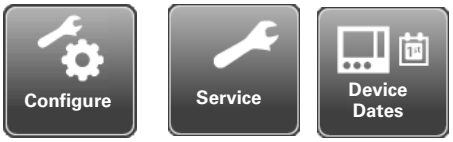
Cust' 7



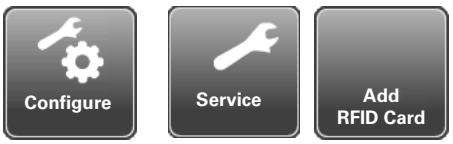




Use this to generate Service Reports.

Cust' 7 

See the User Guide

Cust' 7 

Use this to program a contactless login (RFID) card.

Enter a 'User I.D' and 'User password', and touch 'Write'.



Then offer up the card to the control pad, near the 'wi fi' symbol.

Note:

- You need to make sure you are entering an existing 'User I.D' and password. Alternatively you can use new details, then subsequently create a new user, corresponding to these, in the panel configuration software. You will need to observe the restrictions, such as the minimum length of the password.
- The card can only have one user's details. If the card is already configured, these are overwritten (there is no 'Overwrite?' prompt).
- You may see a 'Write Failed' message. This may appear if you do not offer up a card within five seconds, for example.

2.1 Logging In

In the function details sections above most panel functions have an indicated minimum 'access level' that the logged in user must have to be able to use them. Below are details of logging in.

Login as follows:

1 

Check whether this symbol is shown at the top of the display. This indicates a user is already logged in, and only one user can be logged in at a time – see the 'Logout' button below.

2 

Make sure that you are at a suitable screen for login – use the Home key for example.



You should now see the Login button.



If you see the Logout button, rather than the 'Login' button, someone is already logged in. Use this button if you want to log them out.

3 As appropriate, go to the section "Contactless (RFID card) Login" or "Manual Login" below.

After completing your work at the panel, make sure to touch the Logout key.

You are automatically logged out after a period of inactivity.

2.1.1 Contactless (RFID card) Login

If you have a contactless (RFID) card:

1 Follow the "Logging In" section above.

2 

Offer up the RFID card to the panel, near the 'wireless' symbol. You will automatically be logged in.

3 

You might now need to follow the prompt to activate the keyswitch, displayed on the panel screen. After doing this offer up the card again.

2.1.2 Manual Login

To manually log in:

1 Follow the "Logging In" section above.

2 

Touch the Login button.

3 

You might now need to follow the prompt to activate the keyswitch, displayed on the panel screen. After doing this use the login button again.

4 At the 'Login' screen touch the number buttons to enter your 'User I.D' and your 'User Password'.

2.2 Valid Values

When using the menus you will be entering various values, such as point numbers.

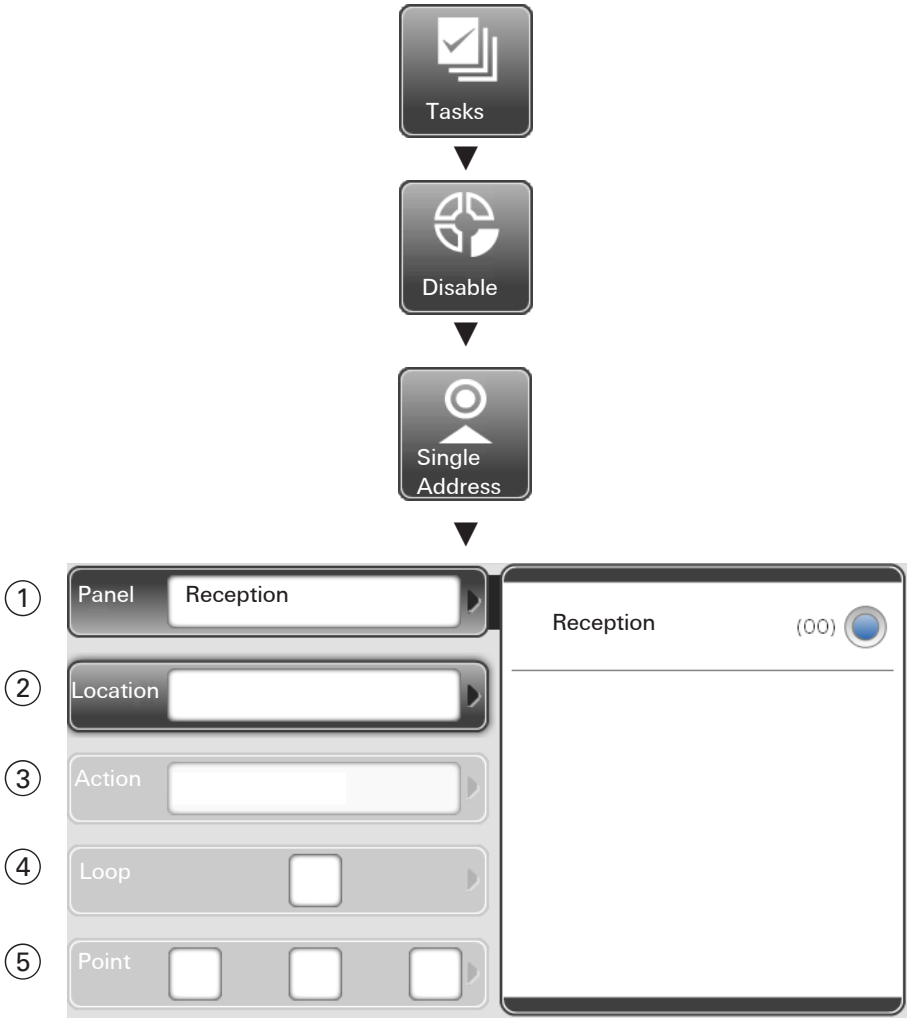
In general, you can set these to any value, including invalid values. If you make an invalid setting there will be an audible or on screen warning.

As an example if you enter a loop address of "A132", and a device has not been configured into this address, you will see an "Invalid entry!" message.

If you are in a position to use a particular option, you will probably know which are the valid values, that you will using.

2.3 Using the Menus Example - Disabling a Point

Below is an example of how you typically use the menus – describing how you would disable the detector at loop point 'A1'.



1 'Reception' is the only panel in this scenario, so it is automatically selected. (Otherwise touch 'Panel' on the left. Touch to select the particular panel on the right.)

2 Touch 'Location' on the left. Touch 'Loop' on the right.

3 Touch 'Action' on the left. Touch 'Disable' and 'Inputs' on the right.

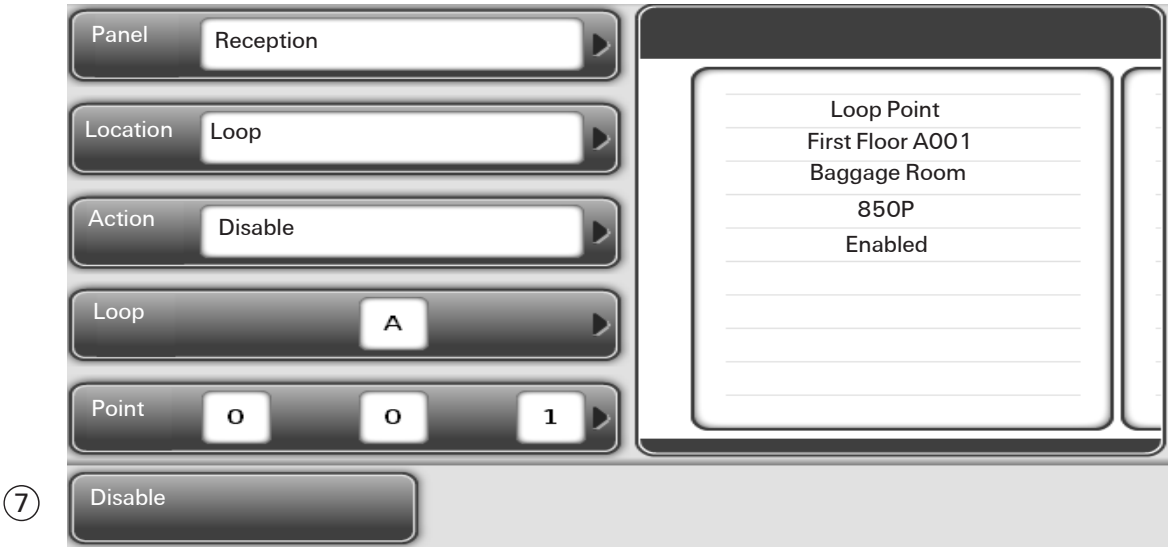
4 Touch 'Loop' on the left. Touch 'A' on the right, touch 'OK'.



For long lists touch within the list and drag up or down to scroll. There is an indication of the portion of the list you are viewing.

5 Touch 'Point' on the left. Touch '0' then '0' then '1' on the right, touch 'OK'.

6 In the case of mistakes, touch an earlier setting on the left to change it.



7 Touch ‘Disable’.

Index

L

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logging on 15
Login
    button 8

P

Panel Test
    icon 8

U

User logged in indication 15

120.515.186_PROFILE-P-S, doc. version 1.0, 25. February 2014 – Subject to change without notice.

Further information about Tyco can be found on the Internet at www.tycoemea.com

Company stamp



850 Series Fire Detectors - *Generation 6*

Features:

- Choice of heat, optical, optical and heat multi-sensor or 3*o*Tec triple multi-sensor
- Any Pantone colour available with CPD approval
- Advanced multi-sensor designs
- Built-in line isolator
- Quick and easy to install
- Extended drift compensation
- Two way infra-red communication to the 850EMT Engineering Management Tool
- Fire, isolate and fault LED indications
- Comprehensive range of bases and base accessories

The 850 series fire detectors are designed to be both adaptable and flexible which means they can be used in most premises to protect against a wide range of potential fire risks. They use sophisticated digital signalling to communicate with the MZX Technology fire control panel. Using the 850EMT Engineering Management Tool, which communicates with the detector via a two way infrared link together with a range of bases and accessories, they are quick and easy to install. Colour options allow the detectors to either blend into the decor or be easily spotted against a contrasting background

850 Series Fire Detectors - *Generation 6*

850PH Photo Heat Detector

With the ability to detect a wide range of fires from flaming to smouldering types, the combined optical and heat multi-sensor detector is the preferred choice for a range of applications including light industrial, retail and office environments. It operates in a number of approved modes and sensitivities that can be dynamically selected to suit different environmental conditions.



850P Photo Detector

More benign environment where any potential fire will be slow burning can be protected using the optical detector. A choice of sensitivities and modes gives this detector a broad range of applications.



850H Heat Detector

To compliment the range the heat sensor can operate in fixed temperature and rate-of-rise modes with a number of approved sensitivities. Most often used in areas where high levels of dust are present or where the environment precludes the use of smoke detectors.



850PC 3*o*Tec Triple Sensor Detector

For life protection and when the environmental conditions are challenging, the 3*o*Tec detector provides the ultimate in detector performance and false alarm rejection. It is a multi sensor that monitors smoke, heat and CO levels in concert to accurately determine the presence of fire. Applications include industrial, retail, transport hubs, and healthcare. Its false alarm rejection properties make it the ideal choice for hotel bedrooms where steam from bathrooms is a common source of false alarms.



Colour Options

Detectors are supplied white as standard. A range of colours are available, these are supplied as packs of ten detector covers and continuity bases. A sample pack is also available that contains one cover and one base in each of the standard 10 colours. In addition to the 10 stocked shades, any Pantone colour can be supplied as a special order for quantities of 100 or over.



850 Series Fire Detectors - *Generation 6*

Detector Bases

The detector bases are designed to snap-fit to the ceiling tile adaptor or can be screw fixed to a ceiling or electrical box in the traditional manner. A park position allows the detector to be mechanically attached to the base without making electrical connection to facilitate the testing of electronic free bases.

4B-C 4" Continuity Base

Use with 850 Series detectors that have built in line isolator. The 4B-C base provides continuity when the detector is removed.d.



850 EMT Engineering Management Tool

The 850EMT is a commissioning tool that communicates with 850 series fire devices via a two way infrared link. It is designed to speed up and simplify installation and commissioning, reduce the possibility of engineering error and improve health and safety by removing the need for working at height.



Detector Base Accessories

A number of ingeniously designed detector base accessories combine to cut installation time, enhance the installed appearance and mechanically protect the installation.



Ceiling Tile Adaptor CTA

The CTA is used to fix detectors to suspended ceilings and allows the detector to be commissioned and tested before the ceiling is fitted. It can cut the total installation time by 30%..



CTA Adapter Plate

When beacon bases or sounder bases are fixed to the CTA, the adaptor plate is required to provide standard electrical box fixings.



850 Series Fire Detectors - *Generation 6*

Euro Mount



For surface cable and mini trunking installations, the Euro Adaptor provides a shallow back-box onto which the detector base is fitted.

Deckhead Mount



The deckhead mount provides an IP55 seal between the mount and the detector base to provide superior environmental protection.

Base 6" Adaptor



For use with U.S. style 6″ electrical back boxes or can be fixed directly to a ceiling and used to conceal marks left when older, large diameter detectors are replaced.

Approvals

850PH: EN54-5 and EN54-7, CPD, VdS Type Approval, CEA4021
850P: EN54-7, CPD, VdS Type Approval
850H: EN54-5, CPD, VdS Type Approval
850PC: EN54-5 and EN54-7, CPD, VdS Type Approval, VdS2806, CEA4021

850 Series Fire Detectors - *Generation 6*

DATA SHEET

Technical Specifications

	Dimensions mm	Weight g	Operating Temp.	Relative Humidity
850PH Photo heat detector	Dia. 109 x 43H	76	-25 °C to +70 °C	95% (non-condensing)
850P Photo detector		76	-25 °C to +70 °C	
850H Heat detector		81	-25 °C to +70 °C short-term: to +90 °C	
850PC 3*o*Tec detector		94	-10 °C to +55 °C	
4B-C 4" Continuity Base	Dia. 109 x 23.3H	53	-25 °C to +70 °C (+90 °C for short periods)	
Ceiling Tile Adaptor CTA	Dia. 165 x 51.5 H	232		
CTA Adapter Plate	Dia. 114.5 x 7.5 H	40		
Euro Mount	Dia. 110.4 x 20 H	70		
Deckhead Mount	Dia. 147.5 x 41.5 H	288		
Base 6" Adaptor	Dia. 150.7 x 16.5 H	50		

Ordering Information

516.850.051	850PH Photo Heat Detector	517.050.501	Colour Sample set, pack of 10, one of each cover and base
516.850.052	850P Photo Detector		
516.850.053	850H Heat Detector	517.050.502	Orange Pantone 1645C (semi-gloss) pack of 10 cover and base
516.850.054	850PC 3*o*Tec Triple Sensor Detector		
516.850.900	850EMT Engineering Management Tool	517.050.503	Yellow Pantone 102C (gloss) pack of 10 cover and base
517.050.042	4B-C 4" Continuity Base	517.050.504	Green Pantone 355C (matt) pack of 10 cover and base
517.050.060	Ceiling Tile Adaptor		
517.050.058	CTA -AP CTA Adaptor Plate	517.050.505	Red Pantone 186C (matt) pack of 10 cover and base
517.050.052	4B-EM 4" Euro Mount		
517.050.054	4B-6A 4" to 6" Base Adaptor	517.050.506	Brown Pantone 1615C (matt) pack of 10 cover and base
517.050.051	4B-DHM Deckhead Mount		
517.050.055	4B-DAF 4" Base DIN Address Flag	517.050.507	Blue Pantone 639C (gloss) pack of 10 cover and base
516.800.915	Standard Address Flag		
		517.050.508	Pink Pantone 238C (gloss) pack of 10 cover and base
		517.050.509	Sliver Pantone 877C (metallic) pack of 10 cover and base
		517.050.510	Gold Pantone 873C (metallic) pack of 10 cover and base
		517.050.511	Black Pantone Hexachrome Black C (matt) pack of 10 cover and base

For further information on how ADT can help you, contact your local office or phone free on 0800 010 999 or visit us at www.adt.co.uk

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ADT Always There®



Rechargeable Sealed Lead-Acid Battery

Features

- Maintenance-free
- Long Life
- Wide range of sizes for various applications

Power-Sonic rechargeable batteries are leadlead dioxide systems. The dilute sulphuric acid electrolyte is suspended and thus immobilised.

Should the battery be accidentally overcharged producing hydrogen and oxygen, special oneway valves allow the gases to escape thus avoiding excessive pressure build-up. Otherwise, the battery is completely sealed and is, therefore, maintenance-free and leak proof.

Rechargeable Sealed Lead-Acid Battery

DATA SHEET

Product Codes

PS-612	6v 1.2Ah Rechargable Battery
PS-640	6v 4Ah Rechargable Battery
PS-6100	6v 10Ah Rechargable Battery
PS-1212	12v 1.2Ah Rechargable Battery
PS-1221	12v 2.1Ah Rechargable Battery
PS-1230	12v 2.8Ah Rechargable Battery
PS-1242	12v 4Ah Rechargable Battery
PS-1270	12v 7Ah Rechargable Battery
PS-12120	12v 12Ah Rechargable Battery
PS-12260	12v 26Ah Rechargable Battery
PS-12380	12v 38Ah Rechargable Battery
PS-12650	12v 65Ah Rechargable Battery (Np65-12) Volt
PS-12170	12v 17ah Rechargable Battery

PS-1221



PS-12260



Product Codes	Voltage (V)	Ah	Dimensions (LxWxH)
PS-612	6	1.2	97 x 25 x 54.5
PS-640	6	4	70 x 47 x 105.5
PS-6100	6	10	151 x 50 x 97.5
PS-1212	12	1.2	97 x 48 x 54.5
PS-1221	12	2.1	178 x 34 x 64
PS-1230	12	2.8	134 x 67 x 64
PS-1242	12	4	90.1 x 70.1 x 106.2
PS-1270	12	7	151 x 65 x 97.5
PS-12120	12	12	151 x 98 x 97.5
PS-12260	12	26	166 x 175 x 125
PS-12380	12	38	197 x 165 x 170
PS-12650	12	65	350 x 166 x 174
PS-12170	12	17	181x76x167

PS-640



For further information on how ADT can help you, contact your local office or phone free on 0800 010 999 or visit us at www.adt.co.uk

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Ref No PSI127A Issue 3 May 2008

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ADT Always There®

TLI800EN

Network Interface Module and FOM800 Fibre Optic Module

ZETTLER

Inter-controller Network

The use of the MZX Technology Network allows the fragmentation of a number of fire controllers to be drawn into a network system. Because every installation is different, the MZX Technology Network has been designed to be highly flexible, allowing for a wide range of different systems applications. With a large network system the amount of data and information passing between fire controllers can become high during an emergency condition. The MZX Technology Network communication protocol has been specifically designed with this in mind and ensures that each event message passed around the network is acknowledged by the receiving controller in the fastest possible time.

Operation

The network is totally flexible and enables from 2 to 99 fire controllers to be seamlessly linked together, providing a system capability of up to 23,760 fire zones with 99,000 detection addresses, and over 100,000 digital I/O points.

System Overview

The MX Net communications network comprises a collection of network interface modules and peripheral equipment that together form a fault resistant, and flexible peer-to-peer network for the MX Digital addressable fire systems controllers.
With the MZX Technology Network, each MZX Fire Controller on the network permits an operator to interrogate and control any other MZX Fire Controller on the network for extended interrogation and control, the MZX Technology Network allows for up to a maximum of five nodes on the network to be configured either as Master operating stations or TXG graphical user interfaces (refer to datasheet PSF206).

Master operating stations use the standard MZX Fire Controller hardware. In this application, the controller changes its personality; and enables additional information from each controller on the network to be displayed.



Features

// Allows MZX Technology Fire Controllers to be "seamlessly" networked together
// Dual ARM 7 RISC processors
// Support for Emergency Mode Indication
// True peer-to-peer communications; no host or master controller required
// Highly resilient, node failure open and short circuit does not affect remaining network
// Approved to EN54-13 and EN54-2
// Up to 99 controllers may be used on the network
// Wide range of cable topography supported
// Network can use a variety of cable types with up to 2500m between nodes (cable dependant), 1200m using standard 1.5mm MICC cable
// FOM800 Plug on fibre optic module provides up to 5000m between nodes using 62.5/125 multimode fibres
// Easy to install and programme
// Simple to operate

TLI800EN

Network Interface Module and FOM800 Fibre Optic Module

Mode of Operation

The MZX Technology Network employs a token passing communications protocol that treats each node on the network equally. Loss of one or more nodes does not affect the operation of the remainder of the network.

Data is regenerated at each node in the network enabling maximum distance between nodes. In the event of a short/open circuit on the network between any two nodes, isolation will automatically occur and the network will re-configure communications and continue to allow communication between all nodes physically connected.

The MZX Technology Network offers a high level of system integrity, allowing safety critical actions to be passed across the network from one MZX Fire Controller to another. This very high level of system integrity enables the MZX Technology Network to meet the requirements of EN54-13 and EN54-2.

In the event of loss of communication with the host controller, the TLI800EN will use its secondary processor to monitor the controllers fire outputs and if necessary can activate the controllers emergency fire input. In addition it can support a LED annunicator for network panel fire indication, this is wired to a MPM800 via the TLI800EN's integral RBus RS485 port.

Information Exchange

When a MZX Technology fire controller is connected to the MZX Technology Network, each controller maintains full stand-alone capability, whilst also operating as part of a larger system. Once the MZX Technology Fire Controller is connected to the network, the following capabilities are provided.

> Peer Event Exchange:- MZX controllers send and receive chang of-state (event) information via the network to distribute and co-ordinate system control.
> Event/Action:- MZX Controllers support a unique programming capability known as "Event action". This facility is used extensively for the stand-alone fire controller as well as network applications.
> Peer Event display:- MZX fire controllers on the MZX Technology Network can optionally display events received from other MZX Fire Controllers. If required, the network can be configured so that only certain events/actions are passed between certain controllers setting up in effect sub-networks.

Shields/Twisted Pair

The maximum distance between nodes of a circuit is 3000 metres using shielded twisted pair cable. Examples are Belden 9460 or 9574 or using cables with the parameters shown in the table opposite.

The following information is provided on each MZX Controllers LCD screen programmed to display peer events.
> Identification of controller originating the event.
> Event type ie ("Fire alarm, Fault, Clear" etc.).
> Identification of the zone to which the point is assigned.
> Identification of the point that changed state.
> Network Zone Links:- As part of peer to peer exchange, a feature called "Network Zone Links" is available to link a fire zone of one controller to a zone of a second controller. Once linked in this manner, devices assigned to both zones operate as though the were all assigned to the same zone.
> Sectors:- This feature is available for creating groups of related fire zones. The MZX Technology Network will support up to 240 sectors into which any one, any set or all Zones can be assigned. With this facility, Group Actions can be defined to operate on sections instead of zones, enabling one action to control outputs of multiple selected zones. A typical application for sectors, would be to turn on evacuate sounders, shut all fire doors etc.

MZX Technology Network Wiring Topologies

The MZX Technology Network supports a wide variety of communications media and wiring typologies. This system's flexibility means that the MZX Technology Network can be applied to most existing site layouts and wiring schemes.

Bus/Spur

MX Net may be wired as a Bus/Spur circuit, using any of the wiring type listed over, or using a mixture of wiring type. Using the bus circuit will reduce the level of system integrity a cable open or short circuit between network nodes could not be automatically re-configured.

MX Net Wiring

Mineral insulated copper clad (MICC)
RS 485 electrical signalling around the network using standard MICC cable enables up to 1200 metre distance to be achieved between each node on the network. Use of MICC cable that complies with BS6207 allows the network to be used to signal events such as "FIRE EVACUATE" over the network in accordance with BS5839: Pt. 1: 1988.

Cable Parameters		
Maximum wire to wire capacitance		Resistance
Baud rate	Capacitance	Maximum resistance = 40 Ohm for EN54-13 compliant installation. Maximum resistance = 65 Ohm for proper function without compliance.(all baud rates)
38400	0.3 uF	
19200	0.6 uF	
9600	1.2 uF	
2400	1.2 uF	
1200	1.2 uF	

TLI800EN

Network Interface Module and FOM800 Fibre Optic Module

Fibre Optics

Fibre optics can also be supported on the MZX Technology Network system by fitting one or two FOM800 modules to the TLI800EN network card, this uses either type 62.5/125 or 50/125 multi-mode fibres between nodes on the network. Use of fibre permits a maximum distance between nodes of up to 5000 metres in either bus or ring topology.

Distributed Systems Network

MX Net provides the gateway to allow a number of the MZX fire controllers to be "seamlessly" networked together, from a simple two controller configuration to the most complex multi user distributed installation. The MZX Technology Network has been designed for use in high rise commercial and residential buildings, and is equally suitable for campus style environments such as universities, hospitals and industrial parks.

Unlike other Fire Companies that use off the shelf computer type networks for networking fire controllers, MZX Technology Network has been specifically designed with high system integrity in mind allowing the network to be installed in accordance with EN54-13 and EN54-2.

Why Choose MZX Technology Network?

> Network, Fire Controller and detection devices all designed an manufactured by Tyco Fire Protection Products, eliminating split responsibility for compatibility.
> Uniquely powerful "CONSYS" event action software programming extended from a single MZX Fire Controller, acro the MZX Technology Network.
> Highly resilient to short/open circuit faults.
> Peer to peer event exchange.
> Data regenerated at each node.

Ring

The MZX Technology Network wired as a ring, enables the network to be fully operational even with an open or short circuit fault between two network nodes. Any of the wiring types can be used in the network ring topography, however if the network is to be installed to BS5839 with the requirement for prolonged operation during a fire it is recommended that mineral-insulated copper-clad (MICC) or other suitable cable to BS6207 is used.

Typical Applications for MX Net Include:-

>Hotels
>University Campus
>Shopping Centres
>Hospitals
>Sports Centre Complexes
>Office Blocks
>Department Stores
>Museums
>Historic Houses
>Industrial Parks
>Airports
>Cruise Liners



TLI800EN

Network Interface Module and FOM800 Fibre Optic Module

TLI 800EN Network Card Mechanical

Dimensions:	116 x 90 x 20 mm
Weight:	0.10 Kg
Housing:	The TLI800 Network P.C.B. is mounted directly onto the MZX CPU800 within the panel enclosure

Electrical

Power Consumption:	74mA @ 24VDC & 20mA @ 5VDC
Network Connections:	2 x RS 485
Network diagnostic:	9 x on board LED's / RS232 port for system analysis and fault finding
Cable Type:	2 Core MICC, Shielded or Twisted pair
Network Connections:	Screw terminals, will accept 2.5 mm^2 cable

Network Parameters

Number of nodes:	99 (max)
Distance between nodes:	1000 to 5000 metres (dependent upon cable type)
Communications type:	RS485
Baud Rates:	9.6K to 115.2K
Transport Type:	Token passing, non-collision protocol

Environmental

Operating Temp:	-10°C to + 55°C
Storage Temp:	-10°C to + 70°C
Relative Humidity:	95% (100% intermittent)

FOM800 Fibre Optic Network Interface Mechanical

Dimension:	50 x 58 x12 mm
Weight:	0.015 Kg
Housing:	The FOM800 is mounted directly onto the TLI800EN Network card

Electrical

Supply Voltage:	Powered from TLI800EN
Network Connections:	2 x ST Fibre optic connections
Cable Type:	62.5/125 or 50/125 multi-mode fibre optic cables

Environmental

Operating Temp:	-10°C to + 55°C
Storage Temp:	-10°C to + 70°C
Relative Humidity:	95% (100% intermittent

TLI800EN-G Housed Network Card with PSU Mechanical

Dimension:	300 x 200 x 85 mm
Weight:	3.85 Kg

Environmental

Operating Temperature:	0°C to +55°C
Relative Humidity:	95% max

Electrical

Supply Voltage:	220 to 250 VAC
Power consumption:	160mA

Ordering Information

557.202.080	TLI800EN Network Card and cable
557.202.081	FOM800 Fibre Optic Module
557.200.039	TLI800EN Network Interface in Housing c/w PSU

ZETTLER, is a leading brand of fire detection, security, and care communications products in the European market. The ZETTLER fire detection product line includes a wide range MZX TECHNOLOGY EN54 CPD approved fire detection products carrying approvals and cross-listings, including VdS and NF, for all European countries. The ZETTLER care communications product line is a technology leader providing the latest IP based Nursecall, Emergency Call, Communication and Management solutions for care homes, hospitals, prisons, and related markets. The ZETTLER product lines are available through ZETTLER dealers as well as many ADT and Tyco offices around the world. For more information, visit www.zettlerfire.com.

PSF250ZT - October 2012

tyco Fire Protection Products

Safer. Smarter. Tyco.™



MCP/CP Series Callpoints

Features:

- Integral LED indicator for easy identification of operation
- Surface or flush mounting
- Extensive range of conventional and digital addressable callpoints
- Test key facility speeds maintenance visits
- Optional transparent hinged cover
- Hazardous areas models available
- IP67 Waterproof models for external applications

A comprehensive range of callpoints for use with both conventional and addressable systems.

All of the callpoints are designed to enable an alarm signal to be given by breaking a glass element which operates a switch and is indicated by an LED indicator. If required, an optional transparent hinged cover may be installed to guard against accidental operation.

MCP/CP Series Callpoints

DATA SHEET

Installation

Callpoints should be installed in accordance with the installation rules that apply. All call points may be surface mounted using a back box.

The MCP200, MCP210, MCP211, MCP270 and CP820 may be semi flush mounted if required with a single gang back box. With the waterproof models it is essential that the correct cable glands are used for cable entry to ensure that the protection rating is maintained.

Operating Principle

The switch is held off by the "edge" of the glass. When the glass is broken, the switch is released. This eliminates the risk of false alarms caused by glasses breaking on their own. A protective plastic coating on the glass prevents operator injury and inhibits the release of glass fragments. A hammer is not required.

Test Facility

When the special test key is inserted from the bottom, the glass drops and tests the switch.

Options

"No glass" (Resettable) Callpoints

All callpoints may be converted to the "no glass" form by fitting the deformable operating element. This is particularly useful in kitchen or food processing areas, where the potential for fragments of broken glass is unacceptable.

Transparent Hinged Cover

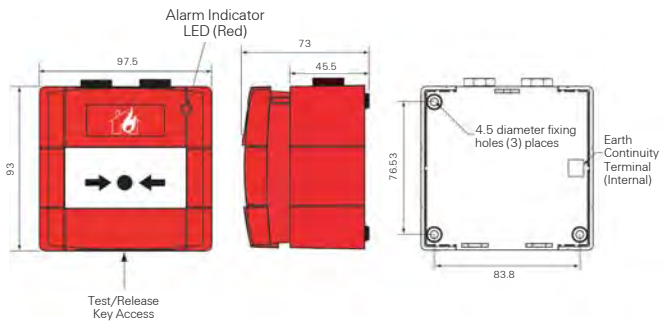
Fitting the cover to any callpoint provides additional protection from accidental operation, often used in shopping centres and schools.

Physical Characteristics

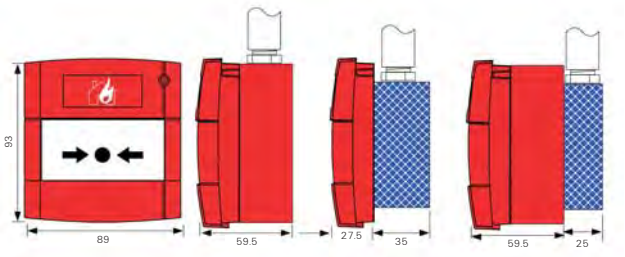
Electrical	
Switch Rating	2 Amps at 30vdc
Mechanical	
Materials	Front - PC/ABS Backbox - Glass Reinforced (GFN2)

Technical Information

Model	Colour	Function Marking	Type	Range
MCP200	Red	Burning House	Conventional Alert	24D
MCP210	Red	Burning House	Conventional Evacuate	24D
MCP211	Red	Burning House	Conventional Evacuate	24D
MCP230	Red	Burning House	Conventional Alert	67
MCP220Ex	Red	Burning House	Conventional Alert	67
MCP270	Yellow	Fire Evacuate	Conventional Evacuate	24D
CP820	Red	Burning House	Addressable	24D
CP830	Red	Burning House	Addressable	67
CP840Ex	Red	Burning House	Addressable	67
Keyswitch	White	Bomb Alarm	Conventional	24D



Outdoor



Indoor

For further information on how ADT can help you, contact your local office or phone free on 0800 010 999 or visit us at www.adt.co.uk

CE

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ADT Always There®

MX Module Housings



K2142 Double Gang Back Box



M520 *MX* Module Cover including PCB cover & screws.



517.035.011 K2214 Aluminium Back Box



517.035.015 QFB/2 Flush Mount Back Box

Technical Specification

	K2142	M520
Dimensions (HWD)	85 x 146 x 38 mm	87 x 148 x 14 mm
Material	PC/ABS	PC/ABS
Part Numbers	517.035.010	517.035.007

Technical Specification

	K2214	QFB/2
Dimensions (HWD)	86 x 146 x 40 mm	85 x 146 x 38 mm
Material	Aluminium	PC/ABS
Part Numbers	517.035.011	517.035.015



FP0529 Empty Responder Box showing 2 standard *MX* modules fitted. The recommended module mounting combinations are:
4x standard modules (61 x 84mm)
or 2x large modules (MIO800)
or 2x standard modules and 1x large module
or 1x responder (ADR/MPR/MXP)
Hardware included:-
16 x HW0130 plastic PCB stand-offs
2 x HW0168 1" body plugs, fitted to box
4 x HW0310 M3 x 10 hex Nylon barrel nut
1 ea. LB0283/LB0296/LB0370/LB0568 labels
8 x SC0172 M3 x 6 Pan Head Phillips screws
1x LT0401 Instructions.

Technical Specification

Dimensions (HWD)	240x185x53 mm
Material	1.2mm Galv. Steel
Part Number	FP0529

D800 Ancillary Housing



The D800 Ancillary Housing provides an IP55 rated enclosure for all unpackaged *MX* modules. It incorporates a window to view the module LED.

Technical Specification

Dimensions (HWD)	140 x 120 x 70 mm
Material	PC/ABS
Ingress Protection	IP55
Part Number	557.201.401

Mounting Brackets



547.004.002 DIN Rail Mounting Bracket



DIN Rail Mounting Bracket shown with RIM800 (not included).

The DIN Rail Mounting Bracket can be used to mount standard sized *MX* Ancillary Modules (61 x 84mm) onto a standard 35mm DIN Rail by simply clipping the PCB onto four pre-fitted plastic pillars.
The MX1 Loop Card/Module Bracket provides an alternative module mounting facility for in-cabinet *MX1* installations.

Part Numbers

547.004.002	DIN Rail Bracket
FP1027	*MX1* Loop Card/2x Module Bracket (not shown)
FP1062	*MX1* Loop Card/4x Module Bracket (not shown)

DIN Rail Mounting Kit



The DIN Rail Mounting Kit provides a convenient way to fix the large format modules (72 x 110mm) onto a standard DIN rail for in-cabinet installations. The MIO800 Module is fitted to the Mounting Kit by sliding the two Base elements onto the MIO800 PCB. Two foot elements are then attached into slots on the bottom side of the Base elements. Finally slide two Side elements onto the ends of the Base elements.

Technical Specification

Dimensions (HWD)	78 x 113 x 31 mm
Material	PC/ABS

Part Numbers

557.201.303	DIN Rail Mounting Kit
DIN800	DIN Rail Kit (NZ only)

Functional Detector Bases

The range of standard bases is supplemented by this selection of sounder bases, relay bases and accessories, including loop powered sounder base for use on MX technology controllers. In addition, changes to the building during it's life can be easily adapted to, by retrofitting sounders and relay outputs to existing detection points.

When functional bases are fitted to universal bases, they automatically lock into position. Removal is then achieved using the detector removal tool. This feature ensures that the detector and functional bases are removed separately.

Tyco MKII Sounder Base



A new low current range of sounder bases for use with Conventional and Addressable Fire Alarm Control Panels.

Features

- Manufactured to EN54 part 3
- Integral sounder and detector base
- Volume and tone adjustable after installation
- Low Power Synchronisation
- Do not require use of a standard base (maybe installed directly onto a standard besa box)

Product Codes

516.800.911
901SB Universal Sounder Base
516.800.910
802SB MX Loop Powered Sounder Base
516.800.913
812SB MX Loop Powered UL Sounder Base
516.800.912
912SB Universal UL Sounder Base
517.050.022
Volume Pot Spare Cover (1 sheet of 144)
517.050.005
4" Detector Base Locking Pin Kit (PK100)

SAM 800 Sounder Addressable Module



The SAM 800 Sounder Addressable Module is an MX addressable device which may be fitted to the 802SB, 812SB, 901SB and 912SB Sounder Bases to enable the MX Control Panel to communicate with and control these sounder bases, without the need for a detector effectively turning the 802SB, 812SB, 901SB and 912SB into an addressable loop powered sounder.

The SAM 800 is suitable for wall or ceiling mounting. Sound selection and tones will be as per the 802SB, 812SB, 901SB and 912SB.

Product Code

516.800.954
SAM 800 Sounder Addressable Module

SAB 801 Sounder Addressable Beacon



The SAB 801 Sounder Addressable Beacon is an MX Addressable Beacon that fits into the Standard Minerva Universal Base. Alternatively the SAB may be fitted to the 802SB, 812SB, 901SB and 912SB Sounder Bases to enable the MX Control Panel to communicate with and control these sounder bases and also provide a Flashing Beacon effectively turning the 802SB, 812SB, 901SB and 912SB into a combined addressable loop powered sounder and beacon.

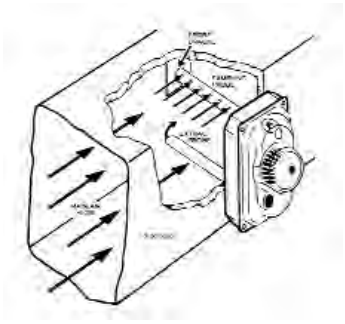
The SAB is suitable for wall or ceiling mounting. Sound selection and tones will be as per the 802SB, 812SB, 901SB and 912SB.

Product Code

516.800.956
SAB 801 Low Power Sounder Addressable Beacon (Compatible with Consys Version 8.1 and above)

Duct Probe Air Sampling

Where smoke within duct work needs to be detected these duct probe units provide an economical solution, for use with 800 series detectors.



Warning

Duct probe units sited in the common duct work to several extract grills may fail to respond to smoke from any one extract due to the effect of dilution. The SMP units will not respond to airflow of less than 1.5m/sec.

	SMP69
Height	90mm
Width	150mm
Length	225mm
Weight	1.2Kg

SMP Duct Probe Units

The SMP Duct Probe Units are designed to be installed in air conditioning supply and exhaust ducts for the purpose of monitoring the airflow for smoke and combustion products.

The SMP69 probe units are designed to accept and operate with the 800 series detectors. For general applications it is recommended that photoelectric smoke detectors rather than ionisation smoke detectors are used.

The SMP stainless steel probe unit is designed to withstand the more demanding environments of the offshore oil and gas industries.

The units are designed to operate in airspeeds of 1.5 to 25 metres per second. A range of sampling tubes from 525mm to 1575mm is available

Technical Specification

Operating temperature:	-20°C to +70°C
Storage temperature:	-25°C to +80°C
Relative Humidity:	0 to 95%
SMP69	Stainless steel 316 housing with transparent polycarbonate cover

SMP69 Duct Probe Air Sampling - Stainless Steel



Product Codes

517.025.035

SMP69 Stainless Steel Duct Probe unit and universal detector base for Series 600/800 Detectors.

517.025.028

DPS450 Probe tube stainless steel 450mm and exhaust

517.025.029

DPS600 Probe tube stainless steel 600mm and exhaust

517.025.030

DPS750 Probe tube stainless steel 750mm and exhaust

517.025.031

DPS900 Probe tube stainless steel 900mm and exhaust

577.025.032

DPS1200 Probe tube Stainless Steel 1200mm and exhaust

517.025.033

DPS1500 Probe tube stainless steel 1500mm and exhaust

*Datasheet - Product Code **PSF92** "SMP69 Duct Probe Unit"*

Manual - Vol01B-06-D1 "Detectors Fire Manual



Features

- MX Digital Loop Protocol
- Extensive Loop Protection
- Interfaced to FIM 800 module

MX Loop Expansion Module

The XLM800 Loop Expansion Module fits “piggyback” style onto the FIM or an existing XLM 800 and is used to:

- Expand the capability of the MX4000 C.I.E. two l loop system to eight loops
- Replace the FIM loops in case of a failure on either a two or four loop system.

The XLM800 Loop Expansion Module controls the communications between the detectors (and other ancillaries) connected on the 2-wire loop circuits and the controller. In addition, the addressable interface contains line isolation circuits which protect the loop driver circuit from short-circuit conditions.

Technical Specification

Dimensions:	17.5H x 104W x 196Dmm
Battery Requirements:	Standby 104.3mA+loop current Alarm105.3mA + loop current Loop Current 495mA maximum

Product Code

557.202.007	XLM-MX Two Loop MX Digital Expansion Card

5B 5" Detector Base - 517.050.017

Description:



This is the most common base designed to fix directly to the ceiling or various common backboxes. This base allows a detector to be plugged in directly or a functional base to be plugged in between the base and detector

MX2 PSU830 Power Supply - 577.201.230 / 557.202.210

Description:



The MX PSU830 power supply module is a state-of-the-art integrated switch mode system power supply and battery charger, which can provide up to 5A external and auxiliary loop power during alarm conditions.
The charging voltage is temperature compensated. The power supply recharges the batteries within 24hr for the following timings:

- •90hr stand by time and 15 minute alarm condition.
- •72hr stand by time and 30 minute alarm condition.

The power supply provides full condition and fault monitoring to the system via the FIM or addressable power supply monitor module APM800. The PSU830 incorporates a booster module to provide the correct voltage levels to maximise the performance of the MX DIGITAL protocol.
Fault signals (Loss of AC, Battery charger fault, Battery fault and earth fault) are provided.
Battery voltage readings are also provided to the FIM and a volt free fault o/p is also provided.
Screw terminals provide 2 x 27V outputs (one with reset control) and one 5V output. The power supply is fitted in a steel cage with mounting points to allow any of the following boards to be mounted:

- APM800 addressable power supply monitor module.
- FB800 fuse board with 15 x 24Vdc fused spurs.
- IOB800 input/output expansion board.
- PTM800 power terminal module.

The MX2 PSU830 Dual PSU Kit is required to power the XLM800 pcb on 6 to 8 loop systems which require the extended loop power capability. It consists of the necessary cables & connectors to enable an additional PSU830 to be fitted to an MX2 controller.

Features

- Universal Input Voltage
- Temperature Compensated
- Full Fault Monitoring
- Can drive 4 fully loaded MX digital loops
- When used with second PSU830 and MX2 8 loop expansion kit can power 8 fully loaded MX digital loops
- Meets the requirements of EN54 part 4 amendment 2

RIM800 Module c/w Front Cover - 568.800.033

Description:

The RIM800 provides a single programmable relay output from the MX DIGITAL addressable loop which can be programmed for a variety of applications including signalling fire conditions to plant, machinery, fire doors, dampers & security systems. The RIM800 relay coil is monitored. The RIM800 relay contact is rated for 2A @ 24V d.c. but can be used to switch mains voltage when used with the HVR800. This unit has two optoisolated terminals specifically for driving the HVR800.



Specifications

- EMC/RFI: Equal or exceeds EN61000.6.3- & EN50130-4
- Operating Temp.: -20oC to +70oC
- Relative Humidity: up to 95% RH non condensing
- Dimensions: 14H x 148W x 87D mm
- Weight: 100g
- Quiescent Current: 200µA
- Relay contacts: 2A @ 24V d.c

801RIL REMOTE INDICATOR - LED516.800.908	
Description:	
	All detector bases have the ability to drive a remote LED in the event that the installed position of the detector is not easily visible. The 801RIL is primarily designed for LPCB influenced markets but is compatible with all 800 Series detectors. **Features** • UK Single gang mounting High intensity red LED

2.5 Suggested Planned Maintenance Procedures

Contents	Description
2.5.1	Introduction
2.5.2	Maintenance Functions
2.5.3	User Responsibilities

2.5.1 Introduction

A regular and organised scheme of maintenance work, planned to cover all details of the installation, within given maintenance periods, ensures continued satisfactory operation with a minimum liability to interrupting the supply due to equipment failure.

Careful attention must be given to securing the safety of personnel and equipment while maintenance or repair work is in progress. A code of Safety Rules based on a system of `Permit to Work' is recommended.

A planned maintenance scheme should include a system where logging in records are kept of inspection, maintenance and repair on all items of plant and equipment.

Where maintenance work is in progress, a danger notice must always be attached to any live apparatus calling attention to the danger of approach. A Caution notice must always be attached to plant or its associated control equipment, which may be associated by interconnection.

Before any work is commenced on any item of equipment, the supply and ancillary circuits must be isolated and locked off if possible.

2.5.2 Maintenance Functions

The Fire Alarm System includes a comprehensive range of maintenance and test functions to aid the management of a system on a day to day basis.

These functions allow the operator to perform such actions as viewing the event log, setting the date and time, etc.

The functions are arranged according to sophistication and access to certain of them necessarily needs to be restricted to trained staff. The control of access has been achieved by assigning functions to Access Levels, each Access Level having an associated numeric pass-code. The pass-code for a particular Access Level is defined at system configuration.

There are no complicated commands or key sequences to remember.

2.5.3 User Responsibilities

2.5.3.1 Supervision

2.5.3.1.1 Named Member of the Premises Management

The Owner or other Person having control of the premises needs to appoint a single, „Named Member of the Premises Management" to supervise all matters pertaining to the fire detection and fire alarm system. The role of this person is to ensure that the system is tested and maintained in accordance with the recommendations of this part of BS 5839, that appropriate records are kept and that relevant occupants in the protected premises are aware of their roles and responsibilities in connection with the fire detection and fire alarm system. This person also needs to ensure that necessary steps are taken to avoid situations that are detrimental to the standard of protection afforded by the system and to ensure that the level of false alarms is minimized.

The following recommendations apply.

a) The „Named Member of the Premises Management" should be given sufficient authority to carry out the duties described in this sub-clause and should normally be the keeper of the documentation in accordance with the recommendations of clause 2.5.3.2.
b) Ensuring that the CIE is checked at least once every 24 hours to confirm that there are no faults on the system.
c) Ensuring that arrangements are in place for testing and maintenance of the system in accordance with Section 6 of this standard
d) Ensuring that the system logbook is kept up-to-date and is available for inspection by any authorized person (e.g. representatives of enforcing authorities and property insurers).

e) Ensuring that appropriate action is taken to limit the rate of false alarms.
f) Ensuring that a clear space of at least 500 mm is preserved in all directions around and below every fire detector, and that all manual call points remain unobstructed and conspicuous.
g) Establishing a liaison between those responsible for changes in, or maintenance of, the building fabric (including redecoration, etc.) to ensure that the work does not unnecessarily compromise the protection afforded by the system, create system faults or cause false alarms. If structural or occupancy changes occur or are planned, it should be ensured that any necessary changes to the fire alarm system are considered at an early stage.
h) Ensuring that, when changes are made to the system, record drawings and operating instructions are updated.
i) Ensuring that, where necessary, a suitable zone plan is displayed and is kept up-to-date.
j) Ensuring that the following spare parts are held within the premises:
    a. six frangible elements and appropriate tools for manual call points, unless there are less than twelve manual call points in the protected premises in which case only two spare frangible elements with appropriate tools need be held;
    b. Such other spare parts agreed between the user and the organization responsible for servicing the system.

NOTE: *It would be of value for the premises management to be aware of the policy of the relevant fire and rescue service with regard to response to calls from the premises and/or any ARC, in the event of operation of the fire detection and fire alarm system.*
Different levels of instruction might be necessary for different occupants.

2.5.3.1.2 Procedures

Ensuring that all relevant occupants, of the protected premises are instructed in the proper use of the system. Particular care should be taken to ensure that relevant occupants are able to interpret fire, pre-alarm and fault indications, and that they are adequately familiar with the appropriate controls, including those associated with initiation of fire alarm signals, silencing of fire alarm signals and resetting the system. It should also be ensured that all occupants are aware of the measures necessary to avoid the generation of false alarms. Relevant occupants should also be instructed in the facilities for disablement and the circumstances in which they should, and should not, be used. In premises in multiple occupation, it should be ensured that sufficient representatives of each occupier are instructed.

NOTE
Different levels of instruction might be necessary for different occupants.

2.5.3.1.3 Training

The „Named Member of the Premises Management" should ensure that users of the System are instructed in its proper use, including the procedures described in 2.5.3.1.2. Any members of staff who will be concerned with first aid Fire-Fighting should be instructed in the correct interpretation of the indications given, and their relationship with the building layout. All management, staff and, in most cases, long term occupants, should be instructed and practised in the proper actions taken in the event of fire.

2.5.3.2 Records

2.5.3.2.1 Drawings and Instructions

The Record Drawings and Operating Instructions supplied by the System Installer should be kept up to date and available for reference, and preferably in the same location as the Control and Indicating equipment.

2.5.3.2.2 Log Book

The logbook needs to be kept for the purpose of recording all events that occur in respect of the system, including fire signals, fault signals and work on the system by the „named member of the premises management". This information may be of value to the organization that services the system and if special action is taken to address false alarm problems.

The logbook might provide evidence of compliance with certain fire safety legislation (such as the Regulatory Reform (Fire Safety) Order 2005 [11], the Fire (Scotland) Act 2005 [12], the Fire Safety (Scotland) Regulations 2006 [13], the Fire and Rescue Services (Northern Ireland) Order 2006 [14] and the Fire Safety Regulations (Northern Ireland) 2010 [15]).

The „named member of the premises management" should ensure that a logbook is kept in which the following should be recorded.

a) The name(s) of the member(s) of the premises management to whom responsibility for the fire detection and fire alarm system is delegated;
b) Brief details of maintenance arrangements;
c) Dates and times of all fire alarm signals (regardless of whether the signal is a false alarm or is initiated as the result of a test, fire drill or genuine fire); if the fire alarm signal has resulted from the operation of a manual call point or fire detector, the device and its location should recorded.
d) Causes, circumstances surrounding and category of all false alarms.
e) Dates, times and types of all tests.
f) Dates, times and types of all faults and defects.
g) Dates and types of all maintenance (e.g. service visit or non-routine attention).

2.5.3.3 Prevention of False Alarms

2.5.3.3.1 General

Many false alarms are caused by operations in the vicinity of Detectors, carried out either negligently or in ignorance. The Responsible Person should ensure that Staff and visiting Contractors are aware that the building is fitted with an Automatic Fire Detection System.

2.5.3.3.2 Notices

Where possible, permanent notices should be displayed at the entrance to all areas in which Detectors are sited. A suitable text is: -
`This area is protected by Automatic Fire Detection. Before undertaking any work involving heat, flame, dust or sparks, clearance must be obtained from…….'

2.5.3.3.3 Tenders and Contracts

Tender contracts for contract work carried out in a protected area should contain a clause making the Contractors responsible for informing their staff of the presence and purpose of the Automatic Detection System, and the precautions adopted when working. Contracts should contain a clause making the Contractor responsible for any charges levied following false alarms generated by the actions of his staff.

2.5.3.3.4 Liaison

The „Named Member of the Premises Management" should establish a liaison with those responsible for changes in or maintenance of the building fabric (including redecoration, etc.) to ensure that their work does not cause faults on, or otherwise interfere with the operation of, the Fire Alarm System. If structural or occupancy changes occur or are planned, then the Responsible Person should ensure that all necessary changes to the Fire Alarm System are considered at an early stage.
Where temporary work involving the generation of dust, smoke, paint and spray etc. is carried out in an area protected by Smoke Detectors, precautions should be taken to prevent false alarms or damage to the Detectors by contamination. Suitable measures may include the following:

a) Temporary replacement of smoke detectors by heat detectors (only possible by reprogramming the system).
b) Provision of a temporary screen between the work area and the detectors.
c) Provision of brightly coloured temporary covers, to prevent ingress of contamination.
d) Disablement of Automatic Fire Detectors.
e) The Responsible Person should ensure that building defects (e.g. leaking roof), plant defects (e.g. steam leaks) and environmental problems (such as inadequate ventilation) that could cause unwanted alarms receive suitable attention.

All of these measures will, to a greater or lesser extent, impair the sensitivity of the system to fire. Experience has shown that the risk of fire is higher during periods of construction or maintenance,

and therefore the provision of manual surveillance should be considered while such measures remain in force.

2.5.3.3.5 Completion of Work

The „Named Member of the Premises Management" should ensure that when the work is completed:

a) Any temporary screening or covering is removed.
b) Residual dust is removed.
c) Any substituted smoke detectors are replaced, and the system reprogrammed back to its original condition.
d) The system is properly reinstated.
e) After reinstatement, a competent person should make an operational check of the system.

2.5.3.4 Servicing

2.5.3.4.1 General

To give greater assurance of reliability, correct servicing is essential. Normally an agreement should be made with the system manufacturer, supplier or other competent contractor for regular servicing. The agreement should specify the method of liaison to provide access to the premises. The name and telephone number of the servicing organisation should be prominently displayed at the control and indicating equipment. For premises in continuous use, e.g. hospitals, hotels, old people"s homes, the agreement should preferable include a requirement that an engineer should be on call at all times, both during and outside normal working hours, and that telephoned requests for emergency service should be executed promptly. In any case agreement should be made that repair services will be available 24 hours. A servicing agreement should be made immediately on completion of the installation whether the premises are occupied or not. If it is not possible to obtain service from engineers on call at all times, or if because of special services no service contract has been arranged, then the „Named Member of the Premises Management" should ensure that at least one person is employed who has had special training with the manufacturer, supplier or installer to deal with simple servicing. The employee(s) should be instructed not to attempt to exceed the scope of their training.

2.5.3.4.2 Routine Attention

2.5.3.4.2.1 General

Although modern fire detection and fire alarm systems may incorporate a high degree of monitoring, so that faults are indicated automatically, it is still necessary for the premises management to ensure that fault indications at the panel are identified for appropriate action. It is also vital for a regular test to be carried out to ensure that there has not been any major failure of the entire system, or a significant part of the system.
Routine testing of the system also provides an opportunity for occupants of the building to become, and remain, familiar with the fire alarm signal(s) that the system produces. In systems with staged alarms that incorporate an “Alert” and an “Evacuate” signal, both signals need to be operated on the occasion of each test to ensure that occupants are aware of the existence of both signals and their different meaning.
The „Named Member of the Premises Management" should ensure that the routine attention and test procedures supplied are properly followed. A general guide to the routine that should be adopted to ensure the continuing good operation of the system is given in 2.5.3.4.2.2 to 2.5.3.4.2.7. The routine adopted in individual premises may vary with the use of the premises; equipment installed in corrosive or dirty conditions will need checked more thoroughly and at more frequent intervals than that in clean and dry situations. In some equipment, a proportion of the testing recommended in this clause is carried out automatically. In this type of equipment the manufacturer may specify an increase in the intervals between testing of certain functions, and in such circumstances the manufacturer's specification may be followed. The Responsible Person should ensure that all equipment is properly reinstated after testing.

2.5.3.4.2.2 Prevention of False Alarms of Fire during Routine Testing

It is important to ensure that operation during testing does not result in a false alarm of fire, and transmission of the alarm to the emergency services should be prevented before the routine test is carried out, unless a recognised test procedure is regularly carried out at an agreed time.

2.5.3.4.2.3 Daily Attention by The User

A check, by the „Named Member of the Premises Management", should be made every day to ascertain the following:

a) That either the panel indicates normal operation, or if not, that any fault indicated is recorded in the log book and that the other actions recommended have been taken.

b) That any fault warning recorded the previous day has received attention. NOTE. On 1 day each week the daily test will be incorporated in the weekly test.

2.5.3.4.2.4 Weekly Attention by the User

When testing the fire detection and fire alarm system, there may be a need to isolate ancillary outputs.

The following recommendations apply.

a) Every week, a manual call point should be operated during normal working hours. It should be confirmed that the control equipment is capable of processing a fire alarm signal and providing an output to fire alarm sounders, and to ensure that the fire alarm signal is correctly received at any alarm receiving centre to which fire alarm signals are transmitted. It is not necessary to confirm that all fire alarm sounder circuits operate correctly at the time of this test.

> ***NOTE 1*** *It is essential that any alarm receiving centre is contacted immediately before, and immediately after, the weekly test to ensure that unwanted alarms are avoided and that fire alarm signals are correctly received at the alarm receiving centre.*
>
> ***NOTE 2*** *The user needs to take account of the manufacturer's recommendations, particularly when battery powered devices are being tested, e.g. within radio-linked fire detection and fire alarm systems.*

b) The weekly test should be carried out at approximately the same time each week; occupants should then be instructed that they should report any instance of poor audibility of the fire alarm signal. In systems with staged alarms incorporating an "Alert" and an "Evacuate" signal, the two signals should be operated, where practicable, sequentially in the order they would occur at the time of a fire (i.e. "Alert" and then "Evacuate").

c) In premises in which some employees only work during hours other than that at which the fire detection and fire alarm system is normally tested, an additional test(s) should be carried out at least once a month to ensure familiarity of these employees with the fire alarm signal(s).

d) A different manual call point should be used at the time of every weekly test, so that all manual call points in the building are tested in rotation over a prolonged period. There is no maximum limit for this period (e.g. in a system with 150 manual call points, the user will test each manual call point every 150 weeks). The result of the weekly test and the identity of the manual call point used should be recorded in the system logbook.

e) The duration for which any fire alarm signal is given (other than solely at CIE) at the time of the weekly test by the user should not normally exceed one minute, so that, in the event of a fire at the time of the weekly test, occupants will be warned by the prolonged operation of the fire alarm devices.

f) Voice alarm systems should be tested weekly in accordance with BS 5839-8.

2.5.3.4.2.5 Periodic Inspection and Test

The recommendations in this clause should be carried out by a competent person. The period between successive inspection and servicing visits should be based upon a risk assessment, taking into account the type of system installed, the environment in which it operates and other factors that may affect the long term operation of the system. The recommended period between successive inspection and servicing visits should not exceed six months. If this recommendation is not implemented, it should be considered that the system is no longer compliant with this part of BS 5839.

The following recommendations are applicable.

a) The system logbook should be examined. It should be ensured that any faults recorded have received appropriate attention.

b) A visual inspection should be made to check whether structural or occupancy changes have affected the compliance of the system with the recommendations of this standard for the

siting of manual call points, automatic fire detectors and fire alarm devices. Particular care should be taken to verify whether:

1. All manual call points remain unobstructed and conspicuous;
2. Any new exits have been created without the provision of an adjacent manual call point;
3. Any new or relocated partitions have been erected within 500 mm horizontally of any automatic fire detector.
4. Any storage encroaches within 300 mm of ceilings.
5. A clear space of 500 mm is maintained below each automatic fire detector, and that the ability of the detector to receive the stimulus that it has been designed to detect has not been impeded by other means;
6. Any changes to the use or occupancy of an area makes the existing types of automatic fire detector unsuitable for detection of fire or prone to unwanted alarms;
7. Any building alterations or extensions require additional fire detection and fire alarm equipment to be installed.

c) The records of false alarms should be checked. The rate of false alarms during the previous 12 months should be recorded. Action taken in respect of false alarms recorded.
d) The battery voltage should be measured with the mains on to check the steady state charge voltage and check it is within the manufacturer"s recommendations.
e) Batteries and their connections should be examined and momentarily load tested with the mains disconnected (other than those within devices such as manual call points, detectors and fire alarm sounders of a radio-linked system), to ensure that they are in good serviceable condition and not likely to fail before the next service visit. Vented batteries should be examined to ensure that the specific gravity of each cell is correct.
f) The fire alarm functions of the CIE should be checked by the operation of at least one detector or manual call point on each circuit. An entry should be made in the logbook indicating which initiating devices have been used for these tests.
g) The operation of the fire alarm devices should be checked.
h) All controls and visual indicators at CIE should be checked for correct operation.
i) The operation of any facility for automatic transmission of alarm signals to an alarm receiving centre should be checked. Where more than one form of alarm signal can be transmitted (e.g. fire and fault signals), the correct transmission of each signal should be confirmed.
j) All ancillary functions of the CIE should be tested.
k) All fault indicators and their circuits should be checked, where practicable, by simulation of fault conditions.
l) All printers should be tested to ensure that they operate correctly and that characters are legible.

It should be ensured that all printer consumables are sufficient in quantity or condition to ensure that the printer can be expected to operate until the time of the next service visit.

m) Radio systems of all types should be serviced in accordance with the recommendations of the manufacturer.
n) All further checks and tests recommended by the manufacturer of the CIE and other components of the system should be carried out.
o) On completion of the work, any outstanding defects should be reported to the premises management, the system logbook should be completed and an inspection and servicing certificate should be issued to the Named Member of the Premises Management".

2.5.3.4.2.6 Wiring Check

The „Named Member of the Premises Management" should ensure that every five years (or more frequent if the building electrical system is tested at shorter intervals) the installation should be tested

in accordance with the testing and inspection requirements of the IEE Wiring Regulations. Any defect should be recorded in the logbook and reported to „Named Member of the Premises Management", and action should be taken to correct it. On completion of the work, a certificate should be given to the Responsible Person.

2.5.3.4.3 Special Servicing

2.5.3.4.3.1 General

The arrangements in Clause 45 of BS 5839-1:213 are intended to maintain the system in operation under normal circumstances. However, from time to time, the fire detection and fire alarm system is likely to require non-routine attention, including special maintenance. Non routine maintenance includes:

a) A special inspection of an existing fire detection and fire alarm system when a new servicing organization takes over servicing the system.
b) Repair of faults or damage.
c) Modification to take account of extensions, alterations, changes in occupancy or false alarms.
d) Action to address an unacceptable rate of false alarms.
e) Inspection and test of the system following a fire.

2.5.3.4.3.2 Action by the User After Any Fire (whether detected automatically or not)

The following recommendations should be carried out as soon as possible after any fire.

a) Every manual call point, automatic fire detector and fire alarm device that might have been affected by the fire should be inspected and tested in accordance with 45.4.
b) A visual examination and suitable tests should be carried out on any other part of the system that lies within the fire area and other areas affected by corrosive smoke from the fire and that might have been damaged by the fire (e.g. power supplies, control equipment and cable). Where there is evidence of damage, suitable action should be taken.
c) Circuits external to the CIE that could have been affected by the fire should be tested for correct operation.
d) On completion of the work, any defects found should be recorded in the system logbook, and the premises management should be notified accordingly.

2.5.3.4.3.3 Action by the User after any False Alarm

The following recommendations apply.

a) Any investigation into an unacceptable rate of false alarms, and any subsequent modifications to the system, should take into account the guidance contained in Section 3 of this standard. Where causes of false alarms cannot be determined, each of the recognized causes discussed in Clause 33 should be formally considered.
b) Following such modifications, the system should either continue to conform to this part of BS 5839, or should not be more non-compliant than prior to the modifications unless agreed with all interested parties.
c) Any relevant documentation should be made available with the system documentation.

2.5.3.4.3.4 Action by the User Following A Fault

If a fault has been shown to exist, either by the system's own monitoring or by any other method, then the Responsible Person should ensure that the following actions are taken:-

a) Determine the area affected by the fault and decide whether special action (such as fire patrols) is needed in that area.
b) If possible, determine the reason for the fault, or note the activities immediately prior to the fault in the area affected.
c) Record the fault in the logbook, inform the organisation responsible for servicing and arrange for repair.

2.5.3.4.3.5 Action By The User Following A Pre-Alarm Warning

A pre-alarm can be a response to a slow growing fire or to indicate detector contamination. Whatever the reason, the following actions should be taken:

a) Determine and thoroughly inspect the area from whence the pre-alarm has originated;
b) If a fire is discovered, carry out the predetermined fire routine;

c) If no fire is discovered, record the events or activities near the suspect detector in the logbook and, if there is need for work to be undertaken on the fire detection and fire alarm system, inform the maintenance company.

2.5.3.4.3.6 Prolonged Periods of Disconnection

The recommendations for inspection and test of the system over a 12 month period should be undertaken.

NOTE If there is a major change in occupation or use of a building it might be appropriate for the cause and effects of the system to be checked.

2.5.3.4.3.7 Other Non-Routine Attention

Other occasions on which attention may be required beyond that of routine servicing include the following.

a) Extensions or alteration to the premises.
b) Changes in occupancy or activities in the area covered by the system.
c) Changes in the ambient noise level or sound attenuation such as to change the sounder requirements.
d) Damage to the installation, even though no fault may be immediately apparent.
e) Any change to ancillary equipment.

2.5.3.4.4 Detectors

2.5.3.4.4.1 General

It is essential that routine tests are adequate to ensure that the requisite degree of sensitivity to fire is maintained, and users should satisfy themselves at this point. Any detectors, which have shown continued signs of instability, should be replaced.

2.5.3.4.4.2 Heat Detectors

Heat detectors should be visually examined for damage or other conditions, such as any coat of paint, likely to interfere with correct operation. Routine tests of operation should be carried out in accordance with the Service and Maintenance Instructions supplied with these recommendations, with at least 2% of the installed heat detectors operated annually. If possible, different detectors should be tested each year. If any of the tested detectors fails to operate properly, then the cause of failure should be investigated. If the cause of the fault is likely to have affected other detectors, or if the cause cannot be determined, then a further 2% of the detectors should be tested. If any failures occur in the second set, then further investigations should be made.

2.5.3.4.4.3 Detectors Other Than Heat Detectors

Detectors other than heat detectors should be checked for correct operation and sensitivity in accordance with the Service and Maintenance Instructions supplied with these recommendations. If detectors are removed from their mounting for this checking, then a final test should be carried out for operation after remounting.

2.5.3.4.4.4 System Disconnection during Testing

Care should be taken to minimize disruption of the normal use of a building by alarms sounding during detector testing. It is preferable that during testing of detectors, as much as possible of the remainder of the system should continue to function normally. If detectors are removed from the system for testing or servicing, replacement detectors should be immediately provided to keep the system in normal operation, or separate provision should be made for surveillance of the unprotected area.

2.5.3.4.4.5 Systems Using Addressable Detectors

Care should be taken during the maintenance of systems in which the detector is itself coded. False information in respect of the origin of alarm could occur if individually coded detectors were exchanged.

2.5.3.4.5 Spare Parts

Ensuring that the following spare parts are held within the premises:

a) six frangible elements and appropriate tools for manual call points, unless there are less than twelve manual call points in the protected premises in which case only two spare frangible elements with appropriate tools need be held;
b) Such other spare parts agreed between the user and the organization responsible for servicing the system.

2.6 Maintenance Instructions

2.6.1 Fire Alarm System
General Service and Maintenance Requirements

1. General

It is important that Fire Alarm Systems are regularly checked to ensure their continued correct operation. The maintenance of Fire Systems should be in accordance with BS 5839 Pt.1:2013, which this section is written to meet.

Note that the Customer may have made alternative arrangements to cover some of the operations required.

WARNING:
ENSURE THAT ANY EXTINGUISHING SYSTEMS ARE "MADE SAFE" (SEE GASEOUS FIXED EXTINGUISHING SYSTEMS - GENERAL SERVICE AND MAINTENANCE REQUIREMENTS) BEFORE CARRYING OUT THE DESCRIBED PROCEDURES.

2. Planned Maintenance

Customers will have a number of planned visits (Usually 2 or 4) during one of which some Annual checks will be performed.

CAUTION:
FOR VERIFYING SATISFACTORY CURRENT AND VOLTAGE MEASUREMENTS A CALIBRATED METER MUST BE USED.
CHECK THAT YOUR METER IS LABELLED AND WITHIN ITS CALIBRATION INTERVAL.

Note
It is good practice to change all fuses every four years. Note this in the logbook. Proceed as follows:

a) Check with the Customer and the entries in the logbook and carry out any necessary action. Check that it is permissible to sound bells.

CAUTION:
WHEN PERFORMING ANY WORK THAT MAY GENERATE AN ALARM CONDITION DISCONNECT OR TAKE "OFF-WATCH" ANY COMMUNICATION DEVICE FITTED, IN CONJUNCTION WITH THE CENTRAL STATION, IF APPROPRIATE.

b) Check the Power Supplies in accordance with the “POWER SUPPLIES, BATTERIES AND CHARGING SYSTEMS - GENERAL SERVICE AND MAINTENANCE REQUIREMENTS”.
c) Check the tightness of all terminal block screws inside the controller.
d) Check the alarm functions of the controller and indicating equipment:

CAUTION:
ENSURE ALL PERSONNEL ARE WARNED THAT THE SOUNDERS ARE ABOUT TO BE TESTED.

Operate a Detector or Call Point in each Zone and check that the warning and signalling de-vices (except "999"ers) operate as required. Annually, every Detector and Call Point should be tested for satisfactory operation.

e) Check all the ancillary functions of the controller where practicable.
f) Check all the fault indicators by simulating a FAULT condition by either:
g) Removing a Detector from its base.
   i) Disconnecting the local circuit from an ancillary unit or;
   ii) Removing the end-of-line resistor from an ancillary unit's circuit.
h) Visually check the control and ancillary equipment for moisture ingress and other deterioration.
i) Visually check whether structural or occupancy changes have affected the requirements for the siting of Call Points, Detectors and Sounders and ensure that Manual Call Points are unobstructed.

j) Visually check that there is a free space of approx. 600mm in all directions below every detector. Annually visually inspect all fixings, wiring, equipment and detectors for dirt or damage and repair and replace as necessary.

WARNING:
ION CHAMBER SMOKE DETECTORS MUST NOT BE CLEANED OR DISMANTLED. THESE DETECTORS MAY ONLY BE REMOVED AND RETURNED FOR REPAIR/REPLACEMENT IN ACCORDANCE WITH THE LATEST AUTHORISED COMPANY INSTRUCTIONS.

k) Check printer ribbons and paper supplies.
l) Reconnect/put "on-watch" any signalling and/or bells if required. Details of the visit and any defect should be recorded in the logbook and appropriate action taken. On completion of the work obtain the signature of the Customer's representative on the visit record and leave a copy for the customer.

CAUTION:
IF ANY PART OF THE SYSTEM IS LEFT INOPERABLE, ESPECIALLY THE COMMUNICATIONS, NOTE THIS CLEARLYON THE DOCKET AND THE LOG BOOK AND POINT IT OUT TO THE CUSTOMER'S REPRESENTATIVE WHEN SIGNING.

PCB Packaging

All PCBs are packaged in non-static bags to prevent damage to electrostatic sensitive devices. When a PCB has been replaced, return the faulty PCB for re-pair in the bag which was used for its replacement. If this bag has been damaged or contaminated, package the faulty PCB in a suitable non-static container.

CAUTION:
FAILURE TO USE THE CORRECT PCB PACKAGING CAN GREATLY IMPEDE PCB FAULT INVESTIGATION AND ANALYSIS.

2.6.2 800 Series Detectors Service and Maintenance

Introduction

This section details the various checks recommended for keeping the detectors in good working order. Carry out maintenance on control equipment and auxiliary equipment as laid down in the relevant publication.

WARNING:
ANY AUXILIARY UNITS WHICH ARE CONNECTED MAY OPERATE DURING THE FOLLOWING PROCEDURES UNLESS DISABLED BY WITHDRAWING FUSES ETC.

ATTENTION IS DRAWN TO GASEOUS FIXED EXTINGUISHING SYSTEMS GENERAL SERVICE AND MAINTENANCE REQUIREMENTS GASEOUS FIXED EXTINGUISHING SYSTEMS - GENERAL SERVICE AND MAINTENANCE REQUIREMENTS IF THE SYSTEM INCLUDES AN ELECTRICALLY-OPERATED GAS EXTINGUISHING SYSTEM.

Periodic Inspection

a) Ensure that there have been no structural changes which may require a change of protection. Any such changes must be the subject of a report to the Service Department.
b) Check that no physical damage has occurred to the detectors, and that stability and alignment are not disturbed.
c) Check that the interconnecting cables are undamaged and secure.
d) Check Heat Detectors (800H, 830H, 850H), Smoke Detectors (800I, 800PH), CO Detectors (800CH) and 801PC Triple Sensing detectors to confirm that a clear space of at least 600mmradius is preserved in all directions below the mounting plane of the detector.
e) Check Smoke (800I, 800PH) Detectors to confirm that the passage of smoke into the detector is not obstructed by surrounding objects.
f) Check flame detectors to confirm that the window of the detectors is not blocked by dirt, oil, grease etc. Clean if necessary. Check to confirm that no physical obstruction has been placed in the line of sight between the detector and the protected area.
g) Check those detectors, as required in the servicing schedule, for correct operation. Detectors which fail to operate satisfactorily must be removed, a replacement inserted and the detector re-commissioned. Do not attempt to disassemble or repair a detector but return it to the factory for disposal.

Note:
The return of Ion Chamber Detectors (800I) is to be carried out in accordance with the latest Health & Safety recommendations for the Handling and Transportation of Radioactive Materials.

Flame Detector Cleaning

Use a vacuum cleaner with a brush attachment or a stiff bristle (not wire) brush to remove dirt that has accumulated on or around the detector and base. The plastic may be cleaned with a damp cloth. If the plastic is severely stained a cloth made damp with dilute detergent and water may be effective. Solvents should not be used unless previous testing has proved they do not affect the material used in construction.

Note:
The act of cleaning or polishing the face or window of a flame detector may cause the detector to produce an alarm. It is important therefore that BEFORE THE WINDOW IS CLEANED, THE DETECTOR IS ISOLATED, either by isolating the detector at the control equipment or by temporarily removing the detector. If the latter method is used a fault will be generated, and care should be exercised to ensure that the electrical contacts are kept dry. De-isolate the detector at the control equipment on completion of cleaning the Flame detector.

Associated Equipment

The following equipment is recommended for testing the 800 range of detectors.

Smoke Detectors Solo A3 Smoke Detector Test Aerosol	 517.001.256
Heat Detectors Solo461 Cordless Heat Detector Tester Kit	 517.001.254
Carbon Monoxide Detectors Solo Carbon Monoxide Test Gas	 517.001.262
Flame Detectors T110 Test Source T210+ Test Source	 592.001.012 592.001.016

Triple Sensor Testing

The 830/850 PC 30Tec contains three detection elements, optical, CO and heat. When tested under „Walk Test" conditions, activating any of the elements will return an alarm condition.

In Modes 0 (Universal) and 1 (Resilient) the 830/850 PC 30Tec is operating as a CO\Heat enhanced optical smoke detector and will continue to operate even if the CO and heat channel fail. As such it is only critical that the optical channel is tested. When configured in other modes the test performed should cover sensors appropriate to the mode configured as follows:

Mode 2 – Heat detector tester.
Mode 3 – Smoke detector tester.
Mode 4 – Carbon monoxide tester.
Mode 5 - The electrical monitoring of the 830/850PC CO cell is adequate to meet EN50292 requirements without the need for external gas testing. The current CO gas test canister is provided for the testing of the CO fire detection part, which uses different software in the panel and is set at a different gain setting to the toxic gas mode. This means that when used with the 830/850PC set to Toxic gas mode it is likely to prove problematic.

Smoke/Fire Detector Replacement

All Tyco Safety Products detectors are designed to provide trouble free performance between services. The length of time between services for each detector will depend upon the environment into which they are installed.

For all detection systems, Tyco Safety Products recommends that the detector are inspected, tested and cleaned as required at least annually. They must be removed for service replacements as follows:

MX Digital Addressable Smoke/Heat/Flame Detectors

As advised by the Fire Controller.

CO Fire Detectors

For all detectors made after 1st August 2002 the sensor life expectancy is now 10 years giving a potential detector service life of 10 years, with a service interval of 5 years. As with other detectors this could be reduced in hostile environments or where detectors are subject to mistreatment. All detectors will be on a yearly maintenance interval with the current go/no go testing.

2.6.3 Power Supplies, Batteries and Charging Systems General Service and Maintenance Requirements

1. General

The correct operation of back-up power supplies is an important element of most alarm systems. The condition of batteries is crucial and relies on the correct set up of charging arrangements.

2. Battery Types

The Batteries generally found in ADT's alarm systems are:

- Sealed Lead-Acid batteries Nominal 12 volts, in a range of capacities.

3. Servicing Requirements

CAUTION:
FOR VERIFYING SATISFACTORY CURRENT AND VOLTAGE MEASUREMENTS A CALIBRATED METER MUST BE USED.
CHECK THAT YOUR METER IS LABELLED AND WITHIN ITS CALIBRATION INTERVAL.

Note: It is good practice to change all fuses every four years. Note this in the logbook. To service power supplies proceed as follows:

a) Visually check the condition of batteries and terminals.
b) Check that the date of installation is marked and replace any batteries that have been installed for more than four years.
c) Check that the mains supply is between 216 and 255 volts, is fitted with the correct fuse and is un-switched or key operated, where appropriate.
d) Check that the charging voltage is 13.8 or 27.6 volts 0.1volt for nominal 12 volt and 24 volt systems respectively.
e) Disconnect the mains supply and check that the stand-by supplies take over without trouble.

Note
It is advantageous to perform as much of the service of the system as possible using the stand-by supply; this will reveal latent battery defects.

Check that equipment fed by the power supply has the correct voltage at its terminals.
The cell voltage should not fall below 1.96 volts per cell.

2.6.4 MX/MZX Fire Controllers General Service and Maintenance Requirements

1. General Information

This manual is written for firmware Version 17.

As the „MX/MZX" equipment form a fire control system, the following periodical checks must be carried out in order to comply with the requirements of BS 5839: Part 1 and marine customer requirements to ensure the continued correct operation of the system.

The following checks and servicing must be carried out:

- Weekly checks of the controller, one detector per zone and the fire detection sounders.
- Three-monthly checks.
- Annual visual, fixture security and zone checks on all units.
- Three-yearly check of all detectors.
- Four-yearly replacement of batteries.

The following are also described:

- Use of built-in controller functions.
- Recommended spares list.

Wherever possible, faults must be rectified by exchange of the faulty PCB or other part for a working spare.

WARNING:
ENSURE THAT ANY EXTINGUISHING SYSTEMS ARE "MADE SAFE" (SEE 05A-03-S1) BEFORE CARRYING OUT THE DESCRIBED PROCEDURES.
ANY AUXILIARY DEVICES CONNECTED TO THE SYSTEM MAY OPERATE DURING THE FOLLOWING PROCEDURES UNLESS DISABLED. NOTIFY THE CUSTOMER PRIOR TO ANY DISABLEMENT.

Note
The EVACUATE or FIRE ALARM, SILENCE, RESET, DAY/NIGHT and INVESTIGATE DELAY keys on the front panel are inoperative until the keyswitch has been turned to the „enable" position.

WARNING:
In order to prevent TERMINAL DAMAGE to the MINERVA MX Controller
the following rules MUST be strictly followed:

1) *ENSURE THAT THERE IS NO FAULT IN THE ADDRESSABLE LOOP BEFORE IT IS CONNECTED TO THE MINERVA MX CONTROLLER.*
2) *NEVER CONNECT THE ADDRESSABLE LOOP WIRING TO THE MINERVA MX CONTROLLER WHILST THIS UNIT IS POWERED-UP.*
3) *NEVER MAKE ANY CHANGES TO THE ADDRESSABLE LOOP WIRING WITHOUT EITHER DISABLING THE ADDRESSABLE LOOP OR POWERING DOWN THE MINERVA MX CONTROLLER.*
4) *DO NOT LEAVE ANY DOCUMENTATION IN CONTROLLER OR ANCILLARY HOUSINGS.*

2. ROUTINE CHECKS

2.1 GENERAL

The checks described in the following paragraphs would normally be carried out at the intervals stated. The Detector Condition Monitoring facility checks the condition of 800 series smoke detectors and will signal a fault when a smoke detector reaches the limit of its compensation.

Therefore, if a controller has detector condition monitoring, the following procedure should be carried out:

a) At regular intervals, or when a detector condition monitoring fault is generated, obtain a printout of all points out of compensation.
b) From the data obtained, replace only those detectors which are out of compensation.

For Marine Systems, carry out routine checks in accordance with the customer's own procedures.

2.2 WEEKLY CHECKS

These checks would normally be carried out by a responsible member of the customer"s staff. They should also be carried out by the service engineer after all routine maintenance checks:

WARNING:
WARN ALL PERSONNEL THAT THE SOUNDERS ARE ABOUT TO BE TESTED.

Proceed as follows:

a) If necessary, clean the front panel of the controller with a suitable cleansing agent.
b) Check all batteries in accordance with publication 05A-10-S1.
c) **Service Engineer only** - Check the tightness of all terminal block screws inside the controller.
d) Using the walk test function check the operation of at least one zone. If a printer is available, print out the results of the walk test.
e) Set one device (either a call point or detector) from one zone into alarm and check that the system responds as follows:
   - The controller"s internal buzzer sounds in a continuous tone.
   - The two red „FIRE" LEDs on the controller front panel light.
   - The appropriate red „FIRE ZONAL" LED (if configured) flashes.
   - The general and zonal sounders operate.
   - The alphanumeric display gives the location of the alarm.
f) Record the device used to initiate the test in the site log book and reset the controller.
g) Check the condition of the printout on any printers attached to the system and replace the ribbon if it is becoming faint.
h) Ensure that each printer has an adequate supply of paper.

Any defect should be recorded in the log book and appropriate action taken. On completion of the work, obtain the signature of the customer or his representative for the Routine Maintenance Visit Record. Leave a copy of this record with the customer for his files.

2.3 THREE MONTHLY CHECKS

Proceed as follows:

a) Perform the weekly checks as detailed in section 2.2.
b) Check the entries in the log book and carry out any necessary action.
c) Check the batteries and their connections in accordance with publication 05A-10-S1.
d) Check all the ancillary functions of the controller.
e) Check all fault indicators by simulating a FAULT condition in each zone by either:
   i) Removing a detector from its base, or;
   ii) Disconnecting the local circuit from an ancillary unit, or;
   iii) Removing the end-of-line resistor from an ancillary unit"s circuit.
f) Visually check the condition of the controller and other ancillary equipment for signs of moisture ingress and other deterioration.
g) Visually check the installation to ascertain whether structural or occupancy changes have affected the requirements for the siting of manual call points, detectors, line isolator base, sounders or sounder bases.

Note
Any changes must be made the subject of a report to the Service Department.

h) Ensure that a clear space of at least 750 mm is preserved in all directions below heat and smoke detectors, that they are correctly sited and that all manual call points remain unobstructed and conspicuous.
i) Ensure that no physical obstruction has been placed in the line-of-sight between flame detectors and the protected area.

Any defect should be recorded in the log book and appropriate action taken. On completion of the work, obtain the signature of the customer or his representative for the Routine Maintenance Visit Record. Leave a copy of the record with the customer for his files.

2.4 ANNUAL CHECKS

Proceed as follows:

a) Perform the three-monthly checks as detailed in section 2.3.
b) Visually check the inside and outside of the controller and ancillary devices for damage.
c) Check for damage to, and paint on, heat detectors; check for dirt, grease, etc. on the lenses of flame detectors.
d) Clean or exchange units as necessary.

e) Check for damage and accumulations of dirt on ion-chamber smoke detectors. DO NOT CLEAN; these units MUST be exchanged and returned to the factory for disposal.

Note
The return of ion-chamber smoke detectors is to be carried out in accordance with the latest company standing instructions for storage and transportation of radioactive materials.

f) Check the fixings for the controller and all detectors, sounders and ancillary equipment which form part of the fire detection system.
g) Check the cable fixings at the controller and each ancillary device for correct connection.
h) Test ALL detectors and call points for correct operation.

Record any defect in the log book and rectify as required. On completion of the work, obtain the signature of the customer or his representative for the Routine Maintenance Visit Record. Leave a copy of this record with the customer for his files.

2.5 THREE YEARLY CHECKS

In addition to the normal yearly checks, filters of VESDA™ Aspirating detectors must be changed.

2.6 FOUR YEARLY CHECKS

In addition to the normal yearly checks, internal standby batteries must be renewed.

CAUTION:
TAKE CARE WHEN HANDLING THE BATTERY. DO NOT CONNECT THE BATTERY THE WRONG WAY ROUND. WHEN THE BATTERY IS NOT CONNECTED, COVER TERMINALS WITH INSULATING TAPE TO PREVENT ACCIDENTAL SHORT CIRCUIT.

2.7 System Log Book

tyco / Fire & Security ADT Fire and Security

Head Office: ADT Fire and Security plc • Security House • The Summit • Hanworth Road • Sunbury-on-Thames • Middlesex • TW16 5DB • England
Tel: 01932 743333 • Fax: 01932 743155

FIRE ALARM SYSTEM LOG BOOK

It is recommended that this log book is maintained by a responsible executive and that every 'event' affecting the installation should be recorded. An 'event' should include fire alarms, false alarms, failure, tests, temporary disconnections, the dates of installing engineer's visits and a note of any outstanding work or conditions.

Date	Time	Zone	Event	Action required	Completion date	Initials

Memo: please carry forward _____

Next service visit due _____

Expendable replacement due (list) _____

WARNING

The Detectors forming part of the Fire Alarm Installation may contain radioactive materials. Such Detectors are clearly marked and they should not be removed unless the Company is first informed and its instructions followed.

Your Installation No. is _____ For Service Call _____

AM0627/000 ISSUE 6 MAY 00

2.8 Certificates

Ref.	Title
2.8.1	Fire Alarm - Handover Checklist
2.8.2	Fire Alarm - Commissioning Certificate
2.8.3	Fire Alarm - Modification Certificate

FIRE DETECTION & ALARM SYSTEMS
HANDOVER CHECKLIST

Job No. 2955629

A Tyco Business

CUSTOMER NAME: Benchmark Vaccines
SITE ADDRESS: 4 Verner Drive
Springwood Ind Est
Braintree
Essex. CM7 2YW

DATE: 14/7/16
CONTRACT NUMBER: 1000609309
PROPOSAL NUMBER: 4269348 / 4874303
JDE JOB NUMBER: 0118B07607 / 01BB20867

TELEPHONE NUMBER:
COMMISSIONING ENGINEER: C PARKS

INSTALLER ANDY WARDEN

DESIGN RESPONSIBILTY: ADT ☐ OTHERS ☐

Note: This checklist covers the requirement for verification under the LPS1014 and BAFE SP203 schemes.

	ENGINEERS DECLARATION (against the specified work only)	✓=Yes, ✗= No	Comments
1	The system complies with the original specification/design	✓	
2	Any changes to original specification/design have been referred to the nominated designer or suitably competent person for approval	✓	
3	System has been installed to meet requirements of category: L1, L2, L3, L4, L5, P1, P2, M, or applicable combinations _____ (delete non applicable categories)	✓	
4	Variations to the defined category have been identified and the schedule of variations (ADT438) agreed by the client	N/A	
5	Cables meet requirements for standard / enhanced / mixed (delete as applicable - variation to be raised where mixed)	✓	
6	Cables are segregated as required and suitably supported (Where visibly checked)	✓	
7	Cables are mechanically protected as required	✓	
8	Junction boxes are correctly labelled and identified on drawings (Where visibly checked)	✓	
9	**All cable insulation & continuity resistance measurements are logged**	✓	
10	All cable penetrations are sleeved where appropriate and fire stopped (Where visibly checked)	✓	
11	Mains supplies are dedicated, correctly fused, labelled and provides double pole isolation at the CIE	✓	
12	Mains supply is correctly identified at ALL distribution boards	✓	
12a	Electrical test certificate(s) for the mains supplies have been witnessed. (Preferably a copy of these is kept for system records)		To follow
13	Standby battery verification has been carried out for ALL power supplies	✓	
14	ALL batteries are clearly marked and labelled with date of installation	✓	
15	Field wiring is labelled and correctly terminated in all control & ancillary equipment	✓	
16	ALL detection, MCPs, warning & ancillary devices have been tested for correct operation and results of the tests have been recorded	✓	
17	Line isolators are fitted as appropriate, operate correctly and are marked on drawings	✓	
18	**Cause & effect of the system has been tested and results of the tests have been recorded**	✓	
19	There are a minimum of two sounder circuits installed	✓	
20	Sound pressure levels have been checked and recorded	✓	
21	**Detector type and spacing is appropriate to the system category**	✓	
22	MCPs are located correctly and travel distance is appropriate to the system category	✓	
23	Remote signalling has been checked for correct operation to ARC (fire & fault) 'If applicable'	✓	
24	Zone charts have been fitted in all appropriate locations (e.g. adjacent to control equipment & repeaters)		To follow
25	"As fitted" drawings are complete and have been updated where required including cables sizes and routing	✓	
26	Fire Welcome Pack, Log Book and operating instructions have been issued to the "responsible person"	✓	
27	The "responsible person" has been adequately trained in the use if the fire alarm system	✓	
28	Premises have been left in a tidy condition and all surplus materials and equipment removed from site	✓	

THE FOLLOWING WORK COULD NOT BE COMPLETED FOR REASONS BEYOND THE CONTROL OF THE COMPANY

DETAILS:

REASONS:

A SUBSEQUENT VISIT BY AN ENGINEER IS REQUIRED TO COMPLETE THE INSTALLATION (✓ one box only) ☐ **YES** ☐ **NO**

I certify that the above checks & functional tests have been completed in accordance with manufacturers recommendations and/or applicable code(s) of practice.

Signature: _____ Print: C PARKS Date: 14/07/16

The Customer / Customer Representative hereby certifies that the work has been carried out in accordance with the specification, also (where applicable) the Customer / Customer Representative has received all necessary keys & paperwork and that completion was effected on the date stated above.

The operating procedures have been demonstrated and explained by the Company and the operating procedures are fully understood.
All invoices and applications for payment raised in accordance with the agreed terms and conditions will be approved for processing.

Signed for and on behalf of the Customer by:

Signature: _____ Print: _____ Position: _____ Date: _____

For further information, please register your details at our web address: www.adt.co.uk

FIRE DETECTION & ALARM SYSTEMS

COMMISSIONING CERTIFICATE No. 3294876

A Tyco Business

CUSTOMER NAME: Benchmark Vaccines — DATE: 14/7/16
SITE ADDRESS: 4 Warner Drive — CONTRACT NUMBER:
Springwood Ind Est — PROPOSAL NUMBER:
Braintree CM7 2TW — JDE JOB NUMBER: 211882087
INSTALLER(S): ANDY WARDEN — SYSTEM CATEGORY: L1
EXTENT OF INSTALLATION WORK COVERED BY THIS CERTIFICATE A new MX Protek addressable fire alarm system, Networked to existing site system.

Note: This certificate covers the requirement for verification under the BAFE SP203 scheme.

☑ All equipment operates correctly.

☑ Installation work is, as far as can be ascertained, of an acceptable standard.

☑ The entire system has been inspected and tested in accordance with the recommendations of clause (39.2C) of BS 5839-1:2013

☑ The system performs as required by the specification prepared by Derek Bond (ADT) a copy of which I have been given.

☑ I have not identified any obvious potential for an unacceptable rate of false alarms (section 3 BS 5839-1:2013)

☑ In accordance with the recommendations of (35.2.6) of BS 5839-1:2013 the system should be soak tested for a period of _____ (min. period one week if system has more than 50 automatic fire detectors).

The following work requires completion before/after the system (delete as applicable) before the system becomes operational: N/A

The following potential causes of false alarms should be considered at the time of the next service visit: N/A

I, being the competent person responsible (as indicated by my signature below) for the commissioning of the fire detection and alarm system, as identified above, CERTIFY that the said work for which I have been responsible complies to the best of my knowledge and belief with the specification & recommendations of Clause 39 of BS 5839-1:2013 ***except for the variations, as listed in the design specification and/or the attached schedule.** (delete if not applicable)

Name (in block letters): C PARKS — Position: ENGINEER
Signature: [signature] — Date: 14/7/16
For and on behalf of ADT Fire and Security: (branch) ROMFORD

For further information, please register your details at our web address: www.adt.co.uk

FIRE DETECTION & ALARM SYSTEMS
MODIFICATION CERTIFICATE

3358877

A Tyco Business

CUSTOMER NAME: Benchmark Vaccines
SITE ADDRESS: 4 Wagons Drive Ind Est
Springwood
Braintree
Essex CM7 2YW
TELEPHONE NUMBER:
INSTALLER (S): Andy WARDEN

DATE: 14/7/16
CONTRACT NUMBER: 1400609300
PROPOSAL NUMBER:
JDE JOB NUMBER: 011852087
011852087

SYSTEM CATEGORY:

EXTENT OF MODIFICATION WORK COVERED BY THIS CERTIFICATE:

Installation + Commissioning 1x MX Profile repeater panel

☑ Following the modifications, the system has been tested in accordance with recommendations of **46.4.2** of BS 5839-1:2013.

☒ Following the modifications, "as fitted" drawings and other system records have been updated as appropriate.

☒ A subsequent visit is required to complete the following work:

I, being the competent person responsible (as indicated by my signature below) for the modification of the fire detection and alarm system, as identified above, CERTIFY that the said modification work for which I have been responsible complies to the best of my knowledge and belief with the specification & recommendations of **clause 46.4** (Recommendations for System Modifications) of BS 5839-1:2013 ***except for the variations, as listed in the design specification and/or the attached schedule.** (delete if not applicable)

Name (in block letters): C Parks
Position: Engineer
Signature:
Date: 14/7/16
For and on behalf of ADT Fire and Security: (branch) Romford.

The customer / customer representive hereby certifies that the work has been completed to my satisfaction.

All invoices and applications raised in accordance with the agreed terms and conditions will be approved for processing.

signed for and on behalf of the customer by:

Signature:
Print: John Dawson
Position: Project Manager
Date: 14/7/16

For further information, please register your details at our web address: www.adt.co.uk

Distribution: White - Customer, Yellow - Logbook, Pink - Customer File

3 CCTV System

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3.1 System Overview

The following is for additional internal cameras to be installed and incorporated into the existing ADT CCTV system.

As part of the additional works to the building ADT will install 6 new internal cameras for added protection and surveillance, these will be linked to the existing system.

3.2 Equipment Overview

Illustra 600 IP Series Camera

The Illustra 600 Series High-Definition (HD) Mini-Domes deliver the four essential qualities of an IP camera: exceptional video quality, easy installation, open platform and reduced cost.

The Illustra 600 Series HD Mini-Domes provide crisp and clear high-definition video, at full frame rates (30ips NTSC/25ips PAL). Whether in bright sun, near darkness or blackout conditions, you can clearly see important details, such as license plates, merchandise labels and faces.

3.3 Equipment Schedules & Manufacturers Details

The Intruder systems installed and commissioned by ADT Fire & Security Plc. consists of the following equipment.

Part Number	Make & Model	Manufacturer	Supplier
ADCI600-D011	Illustra 600 Indoor HD Mini-Dome	ADT Fire & Security	ADT Fire & Security
RJ45CP-10	RJ45 Connectors – Pack of 10		
Address	Mucklow Hill, Mucklow Hill Business Park, Halesowen, West Midlands, B62 8DA		
Tel No.	0121 255 6085	Fax No.	0121 422 3779
WEB Address:	http://www.tycosafetyproducts.com		

3.4 Manufacturers Literature/Manuals

Ref.	Title
3.4.1	Illustra 600 IP Series Cameras

American Dynamics
From Tyco Security Products

Illustra 600 IP Series Cameras

High-Definition Mini-Domes



Indoor Model



Outdoor Model

Features That Make a Difference:

- Superior video quality, even in low-light
- Face and blur detection
- 720p (1MP) & 1080p (2MP) resolutions
- Quick and easy installation and configuration
- One-touch autofocus and motorized zoom
- Reduced storage cost with H.264 and integrated bandwidth management analytics
- Up to five individual and programmable Regions of Interest
- UL Plenum-rated recessed mount included on all indoor models
- 9-40mm lens option eliminates trenching for long range shots
- Lower cost 1080p



The Illustra 600 Series High-Definition (HD) Mini-Domes deliver the four essential qualities of an IP camera: exceptional video quality, easy installation, open platform and reduced cost.

The Illustra 600 Series HD Mini-Domes provide crisp and clear high-definition video, at full frame rates (30ips NTSC/25ips PAL). Whether in bright sun, near darkness or blackout conditions, you can clearly see important details, such as license plates, merchandise labels and faces.

The 610LT offers 1080p resolution. It is a streamlined indoor HD camera with several upgrades over the competition. An auto focus and motorized zoom lens, and built-in recessed Plenum-rated mount sets the 610LT apart in the market. This camera is an excellent choice for businesses that need a quality high-definition camera without audio, alarm contacts or other items typically found in full-featured cameras.

Installation is simple and easy. The cameras include three integrated mounting options: hard surface, electrical box and recessed mounts, ensuring fast installation with no additional cost or hardware. Configuration is also simplified with browser-based, one-touch autofocus, mechanical-zoom, and remote management using the Illustra Connect tool.

The Illustra 600s work with the American Dynamics VideoEdge NVR, exacqVision NVR, HDVR, as well as other ONVIF-compliant NVRs and hybrid recorders. Visit www.americandynamics.net for the latest integrations.

Using onboard motion-detection, and advanced, integrated analytics, the Illustra 600s reduce your ongoing cost of operation by minimizing the cost of storage while ensuring image quality. The IP67-rated outdoor mini-dome reduces costs in colder weather environments by using PoE+ network power, which enables the camera heaters to function at temperatures down to -30°C.

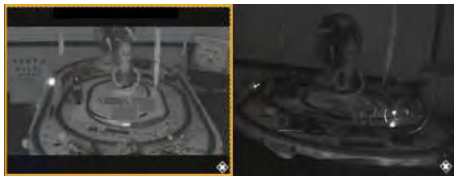
These features make the Illustra 600s the premier choice in high-definition cameras on the market today.

Superior Video Quality: High-Definition

Just like your home television set, the Illustra 600s give you the crisp, clear detail of 720p and 1080p video. These HD standards allow you to take full advantage of newer 16:9 widescreen display monitors that fit our natural vision. For comparison purposes, the Illustra 600 Series surpass other cameras that have resolutions from 720p (1MP), 1.3MP and 1080p (2MP).

Superior Low Light Performance

Too often, significant security events take place at night or in low lighting conditions. With an integrated IR cut filter and powerful CMOS sensors, the Illustra 600s deliver clean, crisp images even in near darkness. This clarity has a further benefit – reduced storage cost. The “noisy” low light images of some megapixel cameras increase bandwidth and storage consumption. *(Not available in the 610LT model)



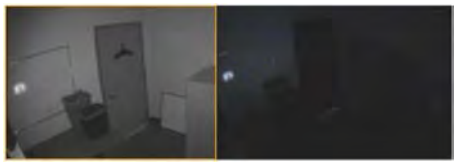
The Illustra 600 performs in low light at .04 lux vs. the top competitors.

PoE IR Illuminator

At night, when there is no ambient light, even a True Day/Night camera will not provide a clear image. The Illustra 600s give you 24/7 security, with integrated infrared (IR)

Features

illuminators to illuminate scenes at night. Effective to a distance of 20 m (60 ft), the Illustra IR illuminators operate on PoE, eliminating the need for a separate power supply.



Illustra integrated PoE IR illuminators: shown in operation on the left, and when not in operation on the right.

Onboard Analytics

The Illustra 600 cameras offer integrated analytics to deal with challenging camera views.



With a constant bit rate of 1mbps, the image of the face with the Illustra 600 is clearer than the competitors at 4mbps, saving on storage.

Face Detection

This camera is uniquely suited for monitoring cash registers, teller lines, entrances and other environments where high-quality facial images are important. With built-in facial detection* technology, the 600s find faces in the scene and improve the quality of the image around the face. Facial detection allows you to get clearer images, while reducing the bit rate in the rest of the scene. This further reduces bandwidth and storage costs. (See product documentation for recommended installation and usage).

Blur Detection

The Illustra 600 cameras can detect when an image is out of focus. Should this occur the camera will send an alert to the operator. With the Series option, cameras can be brought back into focus immediately, reducing downtime and maintenance calls.

The 600 Series cameras also include motion detection, audio detection, and network loss detection. When there is an incident, an alert is sent to the operator or an email can be sent to any address or hand-held device.

Theia Wide Angle Lens

The wide angle outdoor models include the Theia SL183 1.8-3mm wide angle lens. Theia's patented, distortion-free lens technology avoids the "barrel distortion" of other lenses and enables ultra clear views while covering up to 117° field of view. By delivering a constant number of pixels to every area of the image, the integrated Theia lens also improves the accuracy of video analytics operating near the edges of the scene.

***Not available in the 610LT model**



Illustra 600s wide angle lens (left) vs. typical barrel distorted lens

Theia Telephoto Lens

The telephoto lens includes the Theia SL940A 9-40mm lens that helps avoid the need for trenching. Its long focal length magnifies objects at a distance for unobstructed views. This high quality lens is IR corrected, ensuring that the camera will stay in focus as it transitions to and from color mode.

***Not available in the 610LT**

Regions of Interest

The Illustra 600 cameras enhance viewing quality with user-defined regions of interest. The camera can be programmed to manage both higher and lower bit rates in areas customized for each scene. When coupled with a low H.264 constant bit rate, customers can get the best of both worlds. The specific scene has clear imagery within the region of interest, while the camera conserves on bandwidth and storage.

Other camera manufacturers offer the ability to "crop" the image in order to see a region of interest. This method loses all of the video within the cropped area in order to save on bandwidth. However, you lose most of the entire image in those areas. The Illustra 600 cameras allow those areas to be identified and kept in view, while lowering bit rates in ways that minimize the impact on both bandwidth and storage.

Excellent Outdoor Protection

The Illustra 600 Series Outdoor Mini-Domes take a hard stance against challenging environmental conditions. Rated to -40°C with a 24V power supply, or -30°C over PoE+, these cameras thrive in extreme conditions. With no fans to break down, or drying agent bags to replace, the IP67 ratings are tested to operate when submerged at 1 m (3 ft) for 30 minutes. This is a significant autofocus advancement over IP66-rated outdoor cameras. In addition, the Illustra 600's "condensation killer" heater ring operates right where the lens meets the bubble to provide serious environmental protection for any outdoor application.

Easy Configuration: Illustra Connect

We've made configuration even easier with our free Illustra Connect configuration software. Illustra Connect ships with all Illustra cameras and is designed to simplify network discovery and configuration. Illustra Connect saves hours of installation time with remote firmware upgrading to selectable camera groups; setting IP addresses, naming cameras and outputting a summary site audit with the configuration settings of all cameras on the network.

Easy Installation

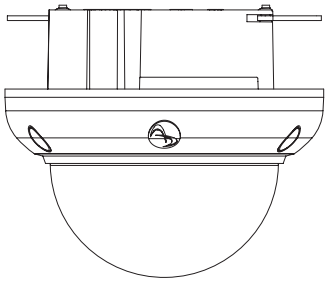
Easy and fast installation is a hallmark of the Illustra 600 Series camera line. The indoor mini-domes are the only indoor camera to provide three integrated mounts without additional hardware or cost. Hard surface, electrical box and recessed mounts are all integrated within the camera. The recessed mount uses integrated "wings" to reduce time spent on a ladder.

To further reduce installation time, the 3-9mm lenses are motorized for remote zoom and one-touch auto focus. Now your installer simply hangs the camera, points it in the right direction and the rest of the job can be done quickly and easily from a web browser.

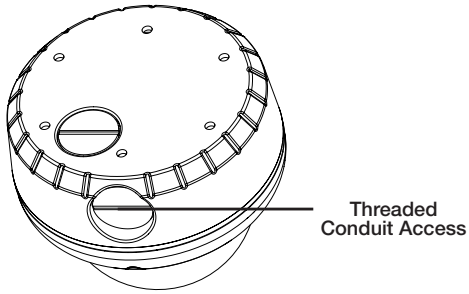
*Illustra 600 supports facial detection, not facial recognition

Mounts and Accessories

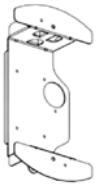
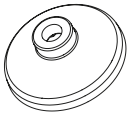
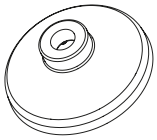
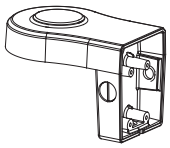
Pendant / Gooseneck Mounts

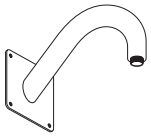
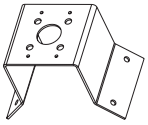
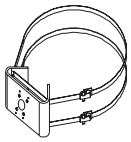


Integrated recessed mount



Surface and Electrical box mount

Mounting Options			
Mount	Image	Model Number	Description
Flush Mount		ADCiM6FLUSHOW ADCiM6FLUSHOB	Flush Mount Kit: Outdoor Dome, White/Black
Pendant Cap		ADCi6DPCAPIW ADCi6DPCAPIB	Pendant Cap: Indoor, White/Black
		ADCi6DPCAPOW ADCi6DPCAPOB	Pendant Cap: Outdoor, White/Black
Wall Mount		ADCiM6WALLWK ADCiM6WALLBK	Wall Mount Kit: Indoor/Outdoor, White/Black

Accessories			
Adapter	Image	Model Number	Description
Gooseneck Arm		ADLOMARM - White ADCBMARM - Black	For use with Pendant Cap
Outside Corner Mount Adapter		ADCDMCRNRO	For use with Pendant Cap and Gooseneck Arm, or directly to the camera back plate.
Electrical Box Adapter		ADCPWMELEC	Use with additional mounting options such as the UK single- and double-gang boxes. This provides a threaded connection directly to the rear of the Illustra 600/610 back plate and versatile screw options.
Pole Mount Adapter		ADCDMPOLE	For use with Pendant Cap and Gooseneck Arm, or directly to the camera back plate.

Take a closer look

	Illustra 610LT-Indoor	Illustra 600 & 610-Indoor	Illustra 600 & 610-Outdoor
Operational			
Video Compression	H.264, MJPEG	H.264, MJPEG	H.264, MJPEG
Max Frame Rate	H.264: 30ips 1920x1080 MJPEG: 30ips 1920x1080	H.264: 30ips 1280x720 (600 model) 30ips 1920x1080 (610 model) MJPEG: 30ips 1280x720 (600 model) 30ips 1920x1080 (610 model)	H.264: 30ips 1280x720 (600 model) 30ips 1920x1080 (610 model) MJPEG: 30ips 1280x720 (600 model) 30ips 1920x1080 (610 model)
ONVIF-Compliant	Yes	Yes	Yes
Video Output	1.0 Vp-p, 75 ohm, composite, RCA service output	1.0 Vp-p, 75 ohm, composite, RCA service output	1.0 Vp-p, 75 ohm, composite, RCA service output
Resolution	CIF, 4CIF, 720p, 1080p	CIF, 4 CIF, 720p (600 model) CIF, 4CIF, 720p, 1080p (610 model)	CIF, 4 CIF, 720p (600 model) CIF, 4CIF, 720p, 1080p (610 model)
Imager	1/2.7″ CMOS progressive scan	1/2.7″ inch CMOS progressive scan	1/2.7″ inch CMOS progressive scan
Light Sensitivity	400 to 900nm	400 to 900nm	400 to 900nm
Day/Night	Color only	Auto (true day/night)	Auto (true day/night)
IR Illumination Optional	N/A	Yes	Yes
Motion Detection	Yes	Yes	Yes
Face Detection	No	Yes	Yes
Privacy Zones	Yes	Yes	Yes
Alarms	Motion, Schedule, Ethernet loss, Tamper Detection	Motion, Schedule, Dry contact, Ethernet loss, Tamper detection	Motion, Schedule, Dry contact, Ethernet loss, Tamper detection
Audio	N/A	Bi-directional duplex, half-duplex	Bi-directional duplex, half-duplex
Alarm I/O	N/A	2/1	2/1
Video Streams	2 simultaneous streams	2 simultaneous streams	2 simultaneous streams
Minimum Illumination	0.1 lux at F1.2 color	0.1 lux at F1.2 color; 0.03 lux b/w and 0.00 lux in IR Illuminator mode	0.1 lux at F1.2 color; 0.03 lux at F1.2 b/w; 0.00 lux at F1.2 in IR Illuminator mode; Wide angle and telephoto 0.2 lux F1.8 color and 0.05 lux b/w
Wide Dynamic Range	70dB, 9 level settings	70dB, 9 level settings	70dB, 9 level settings
IR Corrected Lens Options/ Field of View (FOV)	3-9mm motorized auto focus; FOV 97° - 36°	3-9mm motorized auto focus; FOV 97° - 36°	3-9mm motorized auto focus; FOV 36° - 89° Wide Angle manual focus 1.8-3mm; FOV 89° - 117° Telephoto manual focus 9-40mm; FOV 3.9° - 30°
Lens Type	Verifocal, IR corrected	Verifocal, IR corrected	Verifocal, IR corrected
Network			
Interface	Ethernet 10/100Base-TX	Ethernet 10/100Base-TX	Ethernet 10/100Base-TX
Ethernet Port	RJ-45	RJ-45	RJ-45
Supported Protocols	TCP/IP, DHCP, HTTP, ICMP, UPnP, ARP, DNS, DDNS, PPPoE, SMTP, FTP, RTSP	TCP/IP, DHCP, HTTP, ICMP, UPnP, ARP, DNS, DDNS, PPPoE, SMTP, FTP, RTSP	TCP/IP, DHCP, HTTP, ICMP, UPnP, ARP, DNS, DDNS, PPPoE, SMTP, FTP, RTSP
Configuration Management			
Web Browser	MS IE 8	MS IE 8	MS IE 8
Security	Multi-level, multi-users, IP address filtering, user access log, HTTPS	Multi-level, multi-users, IP address filtering, user access log, HTTPS	Multi-level, multi-users, IP address filtering, user access log, HTTPS
Onboard Storage			
Card Support	No	Micro SDHC 2.0 up to 32GB	Micro SDHC 2.0 up to 32GB
Pre-alarm recording	N/A	Yes	Yes
Recording format	N/A	JPEG, AVI	JPEG, AVI
Playback	N/A	Via browser using FTP	Via browser using FTP
Recording Trigger	N/A	Alarm, network loss, schedule, motion detection	Alarm, network loss, schedule, motion detection
Simultaneous Users			
	Eight	Eight	Eight

Specifications

	Illustra 610LT-Indoor	Illustra 600 & 610-Indoor	Illustra 600 & 610-Outdoor
Electrical			
Power Input	12VDC, 24VAC, PoE IEEE 802.3af, Class 0	12VDC, 24VAC, PoE IEEE 802.3af, Class 0	24VAC, PoE+ IEEE 802.3at, Class 4
Power Draw	6.5W	6.5W; 9W with IR Illuminators on	44.5W and 46.5W w/IR Illuminators on via 24VAC; 25W via PoE+
Physical			
Dimensions (WxH)	135 x 120 mm (5.11 x 4.72 in)	135 x 120 mm (5.11 x 4.72 in)	157 x 147 mm (6.18 x 5.79 in.)
Weight	.907 kg (2 lbs)	.907 kg (2 lbs)	1.04 kg (2.3 lbs)
Housing Color	White only	White or black	White or black
Operating Temperature	-10° C to 50° C (14° F to 122° F) via PoE	-10° C to 50° C (14° F to 122° F) via PoE	4° C to 50° C (40° F to 122° F) via PoE -30° C to 50° C (-22° F to 122° F) via PoE+ -40° C to 50° C (-40° F to 122° F) via AC 24V
Vandal Resistant	Yes - IK10 rated	Yes - IK10 rated	Yes - IK10 rated
Outdoor Rating	N/A	N/A	IP66/IP67
Plenum -Rated	Yes	Yes	With flush mount kit
Regulatory			
Emissions	USA (FCC): CFR 47 Part 15 Canada: ICES-003/NMB-003 Issue 5 EU: EN 55022 Australia/New Zealand: AS/NZS CISPR 22	USA (FCC): CFR 47 Part 15 Canada: ICES-003/NMB-003 Issue 5 EU: EN 55022 Australia/New Zealand: AS/NZS CISPR 22	USA (FCC): CFR 47 Part 15 Canada: ICES-003/NMB-003 Issue 5 EU: EN 55022 Australia/New Zealand: AS/NZS CISPR 22
Immunity	CE: EN50130-4	CE: EN50130-4	CE: EN50130-4
Safety	USA: UL 60950-1 Canada: CAN/CSA-C22.2 No. 60950-1 CB Scheme: IEC 60950-1 EU: EN 60950-1	USA: UL 60950-1 Canada: CAN/CSA-C22.2 No. 60950-1 CB Scheme: IEC 60950-1 EU: EN 60950-1	USA: UL 60950-1 Canada: CAN/CSA-C22.2 No. 60950-1 CB Scheme: IEC 60950-1 EU: EN 60950-1

Model	Description
Illustra 600 Indoor HD 720p Mini-Domes	
ADCi600-D111	Indoor HD mini-dome, 720p, TDN, WDR, 3-9mm autofocus, vandal resistant, PoE, white, clear bubble
ADCi600-D011	Indoor HD mini-dome, 720p, TDN, WDR, 3-9mm autofocus, vandal resistant, IR Illuminator, PoE, white, clear bubble
ADCi600-D131	Indoor HD mini-dome, 720p, TDN, WDR, 3-9mm autofocus, vandal resistant, PoE, Black, clear bubble
ADCi600-D031	Indoor HD mini-dome, 720p, TDN, WDR, 3-9mm autofocus, vandal resistant, IR Illuminator, PoE, black, clear bubble
ADCi600-D113	Indoor HD mini-dome, 720p, TDN, WDR, 3-9mm autofocus, vandal resistant, PoE, white, smoked bubble
ADCi600-D013	Indoor HD mini-dome, 720p, TDN, WDR, 3-9mm autofocus, vandal resistant, IR Illuminator, PoE, white, smoked bubble
ADCi600-D133	Indoor HD mini-dome, 720p, TDN, WDR, 3-9mm autofocus, vandal resistant, PoE, black, smoked bubble
ADCi600-D033	Indoor HD mini-dome, 720p, TDN, WDR, 3-9mm autofocus, vandal resistant, IR Illuminator, PoE, black, smoked bubble
Illustra 600 Outdoor HD 720p Mini-Domes	
ADCi600-D121	Outdoor HD mini-dome, 720p, TDN, WDR, 3-9mm autofocus, vandal resistant, PoE+ heater, white, clear bubble
ADCi600-D021	Outdoor HD mini-dome, 720p, TDN, WDR, 3-9mm autofocus, IR Illuminator, vandal resistant, PoE+ heater, white, clear bubble
ADCi600-D141	Outdoor HD mini-dome, 720p, TDN, WDR, 3-9mm autofocus, vandal resistant, PoE+ heater, black, clear bubble
ADCi600-D041	Outdoor HD mini-dome, 720p, TDN, WDR, 3-9mm autofocus, IR Illuminator, vandal resistant, PoE+ heater, black, clear bubble
ADCi600-D123	Outdoor HD mini-dome, 720p, TDN, WDR, 3-9mm autofocus, vandal resistant, PoE+ heater, white, smoked bubble
ADCi600-D023	Outdoor HD mini-dome, 720p, TDN, WDR, 3-9mm autofocus, IR Illuminator, vandal resistant, PoE+ heater, white, smoked bubble
ADCi600-D143	Outdoor HD mini-dome, 720p, TDN, WDR, 3-9mm autofocus, vandal resistant, PoE+ heater, black, smoked bubble
ADCi600-D043	Outdoor HD mini-dome, 720p, TDN, WDR, 3-9mm autofocus, IR Illuminator, vandal resistant, PoE+ heater, black, smoked bubble
ADCi600-D121	Outdoor HD mini-dome, 720p, TDN, WDR, 3-9mm autofocus, vandal resistant, PoE+ heater, white, clear bubble
Illustra 600 Indoor/Outdoor HD 720p Wide Angle Mini-Domes	
ADCi600-D321	Indoor/Outdoor HD mini-dome, 720p, TDN, WDR, 1.8-3mm wide angle lens, vandal resistant, PoE+ heater, white, clear bubble
ADCi600-D341	Indoor/Outdoor HD mini-dome, 720p, TDN, WDR,1.8-3mm wide angle lens, vandal resistant, PoE+ heater, black, clear bubble
ADCi600-D323	Indoor/Outdoor HD mini-dome, 720p, TDN, WDR, 1.8-3mm wide angle lens, vandal resistant, PoE+ heater, white, smoked bubble
ADCi600-D343	Outdoor/Indoor HD mini-dome, 720p, TDN, WDR, 1.8-3mm wide angle lens, vandal resistant, PoE+ heater, black, smoked bubble
Illustra Indoor/Outdoor HD 720p Telephoto Mini-Domes	
ADCi600-D521	Outdoor/Indoor HD mini-dome, 720p, TDN, WDR, 9-40mm telephoto lens, vandal resistant, PoE+ heater, white, clear bubble
ADCi600-D541	Outdoor/Indoor HD mini-dome, 720p, TDN, WDR, 9-40mm telephoto lens, vandal resistant, PoE+ heater, black, clear bubble
ADCi600-D523	Outdoor/Indoor HD mini-dome, 720p, TDN, WDR, 9-40mm telephoto lens, vandal resistant, PoE+ heater, white, smoked bubble
ADCi600-D543	Outdoor/Indoor HD mini-dome, 720p, TDN, WDR, 9-40mm telephoto lens, vandal resistant, PoE+ heater, black, smoked bubble

American Dynamics
From Tyco Security Products

Model	Description
Illustra Indoor HD 1080p Mini-Domes	
ADCi610-D111	Indoor HD mini-dome, 1080p, TDN, WDR, 3-9mm autofocus, vandal resistant, PoE, white, clear bubble
ADCi610-D011	Indoor HD mini-dome, 1080p, TDN, WDR, 3-9mm autofocus, vandal resistant, IR Illuminator, PoE, white, clear bubble
ADCi610-D131	Indoor HD mini-dome, 1080p, TDN, WDR, 3-9mm autofocus, vandal resistant, PoE, Black, clear bubble
ADCi610-D031	Indoor HD mini-dome, 1080p, TDN, WDR, 3-9mm autofocus, vandal resistant, IR Illuminator, PoE, black, clear bubble
ADCi610-D113	Indoor HD mini-dome, 1080p, TDN, WDR, 3-9mm autofocus, vandal resistant, PoE, white, smoked bubble
ADCi610-D013	Indoor HD mini-dome, 1080p, TDN, WDR, 3-9mm autofocus, vandal resistant, IR Illuminator, PoE, white, smoked bubble
ADCi610-D133	Indoor HD mini-dome, 1080p, TDN, WDR, 3-9mm autofocus, vandal resistant, PoE, black, smoked bubble
ADCi610-D033	Indoor HD mini-dome, 1080p, TDN, WDR, 3-9mm autofocus, vandal resistant, IR Illuminator, PoE, black, smoked bubble
Illustra Indoor LT HD 1080p Mini-Domes	
ADCi610LT-D111	Indoor HD LT mini-dome, 1080p, 3-9mm autofocus, vandal resistant, PoE only, white, clear bubble
ADCi610LT-D113	Indoor HD LT mini-dome, 1080p, 3-9mm autofocus, vandal resistant, PoE only, white, smoked bubble
Illustra Outdoor HD 1080p Mini-Domes	
ADCi610-D121	Outdoor HD mini-dome, 1080p, TDN, WDR, 3-9mm autofocus, vandal resistant, PoE+ heater, white, clear bubble
ADCi610-D021	Outdoor HD mini-dome, 1080p, TDN, WDR, 3-9mm autofocus, IR Illuminator, vandal resistant, PoE+ heater, white, clear bubble
ADCi610-D141	Outdoor HD mini-dome, 1080p, TDN, WDR, 3-9mm autofocus, vandal resistant, PoE+ heater, black, clear bubble
ADCi610-D041	Outdoor HD mini-dome, 1080p, TDN, WDR, 3-9mm autofocus, IR Illuminator, vandal resistant, PoE+ heater, black, clear bubble
ADCi610-D123	Outdoor HD mini-dome, 1080p, TDN, WDR, 3-9mm autofocus, vandal resistant, PoE+ heater, white, smoked bubble
ADCi610-D023	Outdoor HD mini-dome, 1080p, TDN, WDR, 3-9mm autofocus, IR Illuminator, vandal resistant, PoE+ heater, white, smoked bubble
ADCi610-D143	Outdoor HD mini-dome, 1080p, TDN, WDR, 3-9mm autofocus, vandal resistant, PoE+ heater, black, smoked bubble
ADCi610-D043	Outdoor HD mini-dome, 1080p, TDN, WDR, 3-9mm autofocus, IR Illuminator, vandal resistant, PoE+ heater, black, smoked bubble
Illustra Indoor/Outdoor HD 1080p Wide Angle Mini-Domes	
ADCi610-D321	Outdoor/Indoor HD mini-dome, 1080p, TDN, WDR, 1.8-3mm wide angle lens, vandal resistant, PoE+ heater, white, clear bubble
ADCi610-D341	Outdoor/Indoor HD mini-dome, 1080p, TDN, WDR,1.8-3mm wide angle lens, vandal resistant, PoE+ heater, black, clear bubble
ADCi610-D323	Outdoor/Indoor HD mini-dome, 1080p, TDN, WDR, 1.8-3mm wide angle lens, vandal resistant, PoE+ heater, white, smoked bubble
ADCi610-D343	Outdoor/Indoor HD mini-dome, 1080p, TDN, WDR, 1.8-3mm wide angle lens, vandal resistant, PoE+ heater, black, smoked bubble
Illustra Indoor/Outdoor HD 1080p Telephoto Mini-Domes	
ADCi610-D521	Outdoor/Indoor HD mini-dome, 1080p, TDN, WDR, 9-40mm telephoto lens, vandal resistant, PoE+ heater, white, clear bubble
ADCi610-D541	Outdoor/Indoor HD mini-dome, 1080p, TDN, WDR, 9-40 telephoto mm lens, vandal resistant, PoE+ heater, black, clear bubble
ADCi610-D523	Outdoor/Indoor HD mini-dome, 1080p, TDN, WDR, 9-40mm telephoto lens, vandal resistant, PoE+ heater, white, smoked bubble
ADCi610-D543	Outdoor/Indoor HD mini-dome, 1080p, TDN, WDR, 9-40mm telephoto lens, vandal resistant, PoE+ heater, black, smoked bubble

IIIlustra 600 Series Mini-Dome Camera Mounts & Accessories

Model	Description
Illustra 600 Series Mounts	
ADCiM6FLUSHOW	Flush Mount kit, outdoor dome, white
ADCiM6FLUSHOB	Flush Mount kit, outdoor dome, black
ADCi6DPCAPIW	Pendant Cap, indoor, white
ADCi6DPCAPIB	Pendant Cap, outdoor, black
ADCi6DPCAPOW	Pendant Cap, outdoor, white
ADCi6DPCAPOB	Pendant Cap, outdoor, black
ADCiM6WALLWK	Wall Mount kit, indoor/outdoor, white

Model	Description
Illustra 600 Series Mounts	
ADCiM6WALLBK	Wall Mount kit, indoor/outdoor, black
ADLOMARM	Gooseneck arm - white
ADCBMARM	Gooseneck arm - black
ADCDMCRNRO	Outside corner mount adapter
ADCPWMELEC	Electrical box adapter
ADCDMPOLE	Pole mount adapter

Related Products


VideoEdge NVR


HDVR



victor


exacqVision NVR

Approvals

Onvif Driving network video through global standardization

www.americandynamics.net

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3.5 Maintenance Instructions

3.5.1 Intruder Systems
General Service and Maintenance Requirements

1. General

It is important that Intruder alarm systems are regularly checked to ensure their correct operation. This section gives the general requirements for servicing such systems.

2. Planned Maintenance

Planned maintenance should be performed to the requirements of EN50131 (PD6662:2004) and the manufacturer's instructions. This section summarises the requirements.

CAUTION:
FOR VERIFYING SATISFACTORY CURRENT AND VOLTAGE MEASUREMENTS A CALIBRATED METER MUST BE USED.
CHECK THAT YOUR METER IS LABELLED AND WITHIN ITS CALIBRATION INTERVAL.

Note
It is good practice to change all fuses every four years. Note this in the logbook.

Proceed as follows:

a) Check with the Customer and the entries in the logbook and carry out any necessary action. If the logbook cannot be found it is recommended that a new one is supplied.
b) Ascertain that the Customer is still fully conversant with the operation of the system and has a copy of the system record. Ensure that the bells may be rung.
c) If there are any deliberately operated devices in use on the system, ensure that the Customer is informed that they will be out of operation for a while, keep this time to a minimum and tell the Customer when they are operational again.

CAUTION:
WHEN PERFORMING ANY WORK THAT MAY GENERATE AN ALARM CONDITION DISCONNECT OR TAKE "OFF-WATCH" ANY COMMUNICATION DEVICE FITTED, IN CONJUNCTION WITH THE CENTRAL STATION, IF APPROPRIATE.

d) Visually inspect the system, checking for:
   i) Damage, dirt and rust to equipment and fixings.
   ii) Damage and chaffing to cables, especially flexible connections.
   iii) Correct fuses fitted.
   iv) Number and type of detection devices against the specification and/or circuit list.
e) Check the power supplies in accordance with “POWER SUPPLIES, BATTERIES AND CHARGING SYSTEMS - GENERAL SERVICE AND MAINTENANCE REQUIREMENTS”.
f) Check that all detection devices are correctly in-stalled and operate according to the specification, including deliberately-operated devices.
g) Check the operation of all external audible alarms for loudness, tamper detection, self-actuation and programming or connection of cut-off and delay, as appropriate.
h) Check to ensure that each detector indicates correctly at the controller. Set the system and check the entry/exit route sounder. Operate a detector and check the external and internal audible alarms operate. Unset the system and check the correct operation of the tamper detection circuit.
i) Check the satisfactory operation of any signal-ling system to the central station (or Police Station where appropriate). Check all the signals that could be transmitted are received. Any defect should be recorded in the logbook and appropriate action taken. Ensure that the mains supply and signalling are reconnected and the system is reset. On completion of the work obtain the signature of the Customer's representative on the visit record and leave a copy for the customer.

CAUTION:
IF ANY PART OF THE SYSTEM IS LEFT INOPERABLE, ESPECIALLY THE COMMUNICATIONS, NOTE THIS CLEARLY ON THE DOCKET AND THE LOG BOOK AND POINT IT OUT TO THE CUSTOMER'S REPRESENTATIVE WHEN SIGNING.

3.5.2 Power Supplies, Batteries and Charging Systems General Service and Maintenance Requirements

1. General

The correct operation of back-up power supplies is an important element of most alarm systems. The condition of batteries is crucial and relies on the correct set up of charging arrangements.

2. Battery Types

The Batteries generally found in ADT's alarm systems are:

- Sealed Lead-Acid batteries Nominal 12 volts, in a range of capacities.

3. Servicing Requirements

CAUTION:
FOR VERIFYING SATISFACTORY CURRENT AND VOLTAGE MEASUREMENTS A CALIBRATED METER MUST BE USED.
CHECK THAT YOUR METER IS LABELLED AND WITHIN ITS CALIBRATION INTERVAL.

Note:
It is good practice to change all fuses every four years. Note this in the logbook.
To service power supplies proceed as follows:

a) Visually check the condition of batteries and terminals.
b) Check that the date of installation is marked and replace any batteries that have been installed for more than four years.
c) Check that the mains supply is between 216 and 255 volts, is fitted with the correct fuse and is un-switched or key operated, where appropriate.
d) Check that the charging voltage is 13.8 or 27.6 volts 0.1volt for nominal 12 volt and 24 volt systems respectively.
e) Disconnect the mains supply and check that the stand-by supplies take over without trouble.

Note:
It is advantageous to perform as much of the service of the system as possible using the stand-by supply; this will reveal latent battery defects.

f) Check that equipment fed by the power supply has the correct voltage at its terminals.
g) The cell voltage should not fall below 1.96 volts per cell.

3.6 Certificates

Ref.	Title
3.6.1	CCTV Handover Certificate

EXTRA INTERNALS

HANDOVER CERTIFICATE

CCTV System

No. 2769860

CUSTOMER NAME: Benchmark Vaccines Ltd
SITE ADDRESS: 4 WAGNER DRIVE
Springwood Ind Est
BRAINTREE
ESSEX. CM7 - 2YW

DATE: 17th MAY 2016
CONTRACT NUMBER: 1000759218
PROPOSAL NUMBER:
JDE JOB NUMBER: 0118620148

TELEPHONE NUMBER:
COMMISSIONING ENGINEER: A. WHITE
INSTALLER OTHERS

	ENGINEERS DECLARATION (against the specified work only)	✔=Yes, ✗= No	Comments
1*	The installation is in accordance with the specification and any changes agreed with the Customer in writing.	✔	
2*	The system complies with relevant standards e.g. NCP 104, BS 7671, (BS) EN 50132-7	✔	
3*	All mains connections have been checked for continuity and earthing in compliance with current IEE regulations.	✔	
4*	The supply fuses to the system are of the correct rating.	✔	
5	All housings containing mains voltage have warning labels attached.	✔	
6*	There is a fully completed Record of Operational Checks Form(s) ADT 095.	✔	
7	The UPS circuit(s) is/are charging correctly.	✔	
8	The UPS will carry system under full load for the specified time with supply switched off	✔	
9	All batteries are clearly marked with the date of installation.	✔	
10*	All video cables are correctly terminated at 75 ohms, including monitor switch settings.	✔	
11*	All cables are labelled appropriately	✔	
12*	The camera and lens types are correct for each position and are as specified.	✔	
13*	The fields of view are correct and clear of obstructions.	✔	
14	The operation of auto iris lenses under varying light levels is satisfactory.	✔	
15*	Camera mountings are installed as per manufacturers instructions.	✔	
16	Pan / tilt warning signs are mounted adjacent to pan / tilt heads.	✔	
17	Pan / tilt stops are correctly set.	✔	
18	Telemetry controls operate correctly on all controlled functions.	✔	
19	Supplementary lighting works and all units are correctly aligned.	✔	
20	Zoom lenses track correctly over full range.	✔	
21	All screen washer bottles are full.	✔	
22	Anti-climb barriers are fitted to towers.	✔	
23	Has the Frames Per Second been set up correctly as per customers requirements.	✔	
24	Has the DVR time and date been set up correctly with GMT.	✔	
25	A test recording has been made and played back to verify that all cameras decode correctly.	✔	
26	Multiplex programming log record is correct and complete, where applicable.	✔	
27	Has the Customer been trained on the use of CDR for storage of images and playback on a PC.	✔	
28*	The Customer has been informed of their responsibilities regarding the Data Protection Act.	✔	
29	The Customer has been supplied with signs regarding Data Protection.	✔	
30*	The Customer has been shown how to operate the system and full training is offered	✔	
31	The Evidence Kit has been issued where applicable.	✔	
32	As fitted drawings are complete, showing fields of view.	✔	
33*	System documentation is complete as set out in NACOSS NCP 104	✔	
34*	Service history card is on site and completed.	✔	
35*	The CCTV Welcome Pack has been completed, issued and requested that it is located near the Controls.	✔	
36	Service telephone label complete with contract number is located appropriately.	✔	
37*	All surplus materials and equipment have been cleared from the site.	✔	
38*	The customer premises have been left in a tidy condition.	✔	
39*	I have completed and tested the Installation of the **CCTV System** in accordance with our specification and contract.	✔	

*Required on all CCTV Systems

THE FOLLOWING WORK COULD NOT BE COMPLETED FOR REASONS BEYOND THE CONTROL OF THE COMPANY ★

DETAILS:

REASONS:

A SUBSEQUENT VISIT BY AN ENGINEER IS REQUIRED TO COMPLETE THE INSTALLATION (✔ one box only) ☐ **YES** ☒ **NO**

BALANCE COLLECTED ON DAY OF HANDOVER (✔ one box only) ☐ **YES** ☒ **NO**

The Company hereby certifies that the work has been completed in accordance with the specification supplied and that the system has passed its acceptance tests. (see ★)

Signed for and on behalf of the Company by:

Signature A White Print A. White Pln Date 17/5/16

The Customer / Customer Representative hereby certifies that the work has been carried out in accordance with the specification, also (where applicable) the Customer / Customer Representative has received all necessary keys & paperwork and that completion was effected on the date stated above.

The operating procedures have been demonstrated and explained by the Company and the operating procedures are fully understood by the Customer / Customer Representative.

All invoices and applications for payment raised in accordance with the agreed terms and conditions will be approved for processing.

Signed for and on behalf of the Customer by:

Signature M Mohammed Print M. Mohammed Position Project Manager Date 17/5/16 6/6/16

For further information, please register your details at our web address: www.adt.co.uk

4 Health & Safety

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4.1 Introduction

The Construction (Design and Management) Regulations 2007 (the CDM Regulations) have introduced the need to create a permanent record of Health and Safety hazards present in structures and associated installations. This information is required to be passed on to the Client as part of the handover information to assist those responsible for the structure after the handover to manage Health and Safety during maintenance, repair, refurbishment, demolition, cleaning and any future construction activities.

The legal requirements to protect personnel involved in construction or cleaning, or any person who may be affected by that work, have evolved from the following documents:

- The Health and Safety at Work etc. Act 1974
- The CDM Regulations 2007
- The Management of Health and Safety at Work Regulations 1999

Legal Responsibilities of Employers

Health and Safety law states that organisations must:

- Provide a written health and safety policy (if they employ five or more people).
- Assess risks to employees, customers, partners and any other people who could be affected by their activities.
- Arrange for the effective planning, organisation, control, monitoring and review of preventive and protective measures.
- Ensure they have access to competent Health and Safety advice.
- Consult employees about their risks at work and current preventive and protective measures.

Failure to comply with these requirements can have serious consequences – for both organisations and individuals. Sanctions include fines, imprisonment and disqualification.

It is likely that this manual will form a part of the Health and Safety File for the project, therefore this section includes information relating to hazards that may be encountered in the operation or maintenance of the equipment and systems, or with any materials or substances similarly used. In the course of the preparation of the manual, Manufacturers and Suppliers were asked to provide details of hazards relating to their equipment or services which should be made known to a subsequent user. Where such information has been provided reference is made within this section, with a cross-reference to the appropriate Manufacturers' literature.

It is not the intention to detail typical hazards that may be found, but to include only site-specific information. Therefore, the information contained in this section will vary considerably depending on the type of installation and the systems involved. Furthermore, this manual does not attempt to describe or explain the responsibilities imposed by the above mentioned legislation. It is assumed that those responsible for the building and the Health and Safety of its occupants are fully conversant with the requirements.

4.2 Company Policy Statement

	Date	Title
4.2.1	Nov 2015	Tyco Global Environmental, Health & Safety Policy

November 2015

Global Environment, Health & Safety Policy

Vision

To provide products and services to our customers with Zero Harm to People and the Environment

Global Policy

At Tyco, we are committed to producing products and providing services in a safe and responsible manner that respects the health and safety of our employees and others working on our behalf, our customers, our share-holders, the communities in which we operate, and the environment. Tyco promotes a workplace where protecting people and the environment is a core part of the way we conduct business. All Tyco employees and contractors are responsible for understanding, promoting and implementing this policy and following our operating principles.

Operating Principles

// We value human life above all else and manage risks with that principle in mind.

// We believe all accidents are preventable and take practical steps to eliminate safety hazards and harmful environmental impacts from our business activities through design risk identification, assessments and controls.

// We monitor the effectiveness of our controls and make corrections as necessary.

// We comply with all applicable environmental, health and safety (EHS) laws, regulations and other requirements, and we set higher standards where unacceptable risks are identified.

// We strive to continually improve our EHS management system and processes, correcting deficiencies when identified.

// We set EHS objectives, plans and performance measures and regularly review and report on our progress in an open and transparent manner.

// We believe everyone is responsible for his/her own behavior and performance in support of our EHS principles and every manager, supervisor and employee is accountable for our EHS performance.

// We seek to develop our products to prevent harm to people and the environment – from their design and manufacture to their use, recycling, or disposal – and we deliver our services with the same principle in mind.

// We conserve energy, water and raw materials as well as recycle and reduce waste in order to support sustainable growth and business success.

// We assist our customers and suppliers in improving their EHS programs and performance.

// We engage with the communities in which we operate to promote mutually beneficial EHS objectives.

// We invest appropriate resources to support our vision of Zero Harm to People and the Environment.

Our signatures below demonstrate our personal commitment to the above global policy.

George R. Oliver
CEO

Jordi Andreu
President, Tyco Installation and Services UK & Ireland

Business Unit Leader

Safer. Smarter. Tyco.™

4.2.2 Policy

4.2.2.1 The Company's General Statement of Health and Safety Policy is provided at HSP 1, and contained in this Health and Safety manual (Section 4.2 It is signed by the Managing Director, UK and Ireland.

4.2.2.2 Company Health and Safety Standards have been developed to provide guidance, understanding and the procedural and documentary requirements necessary to address specific regulations. They are intended to provide a standardised Company approach to compliance that may be audited and can, if necessary, be used as proof of statutory compliance.

4.2.2.3 The Company recognises its obligations under Section 4(1) of The Health and Safety at Work Act 1974, and the various duties and obligations under The Management of Health and Safety at Work Regulations 1999 and associated legislation and will take all reasonable measures to prevent, so far as is reasonably practicable, any breach of duty placed upon the Company by legislation and/or this Policy.

4.2.2.4 All employees of the Company will at all times exercise diligence in ensuring that this policy is adhered to. Responsibilities of individuals are determined by their grade of employment as detailed elsewhere in this Policy.

4.2.2.5 The Company will undertake, so far as is reasonably practicable, the following:-

a) The provision and maintenance of plant and systems of work that are safe and without risks to health.
b) Arrangements for ensuring safety and absence of risks to health in connection with the supply, use, handling, storage and transporting of articles and substances.
c) The maintenance of premises and places of work which are safe and without risks to Health and safe access to and egress from such places.
d) The provision and maintenance of a working environment for Employees without risks to health and adequate as regards facilities and arrangements for their welfare at work.
e) The provision of such information, instruction, training and supervision as is necessary to ensure the health and-safety at work of employees.
f) Adequate arrangement to ensure that employees or their representatives are given every facility for consulting with management in promoting and developing measures to ensure the health and safety at work of all employees.
g) Systems and procedures which will ensure that all operations and activities are executed at all times in such a manner that persons not in our employment who may be affected by such operations are not exposed to risks to their health and safety.

4.3 Regional Policy Statement

4.3.1 Introduction

4.3.1.1 This statement sets out the Policy of ADT Fire & Security Plc., (Hereinafter called the Company), in respect of any Employee, Self-Employed Person or Contractor under our control and whose Health & Safety may be affected by our Activities. Its intention is to assist in protecting all Company Personnel whilst at work and to assist the Company in fulfilling its Legal and Moral obligations.

4.3.1.2 In addition to the persons mentioned in 4.3.1.1 above, this Policy is also intended to assist in ensuring that any other person who comes into contact with this Company or its activities (whether work related or not) are not adversely affected with regard to their Health and Safety.

4.3.1.3 The Company will ensure that all persons referred to in 4.3.1.1 above are fully aware of, and become familiar with the content of this document; they will also be made aware of the possible consequences in the event of any breach of this document. They will be required to sign that they have read and understand the content, as well as signing for understanding of each individual Method Statement associated with the works that they are undertaking.

4.3.1.4 By complying with the intent of 4.3.1.3 above all persons mentioned in 4.3.1.1 will be able to work safely and without undue risk to their Health & Safety.

4.3.2 Definitions

4.3.2.1 The term „at work" will mean wherever work takes place or travel for work (i.e. travel between the Company Premises and Site/Clients Premises or Travel between Sites).

4.3.2.2 The term „legal obligations" refer to the statutory duties laid down. The Company's objective is to provide for its work force, high standards of health, safety and welfare and to manage all its activities and operations to comply in full, with all policy, corporate and statutory standards and regulations, together with appropriate national and international industry and government (HSE) codes of practice.

4.3.3 Statutory

Almost all recent UK Health and Safety Regulations are based on a very extensive and constantly growing list of European Directives that have, or will be taken into UK law. Although much of this health and safety legislation is devoted to general or specific workplace safety or has health, safety or welfare implications for all employers, not all is directed towards our typical activities. Whilst our intention must be to fulfil all statutory obligations, the following, together with amendments and related legislation, are among those most relevant to our operations.

- Health & Safety at Work 1974
- Electricity at Work Regulations 1989
- Management of Health and Safety at Work Regulations 1999
- Manual Handling Operations Regulations 1992
- Display Screen Equipment Regulations 1992
- Personal Protective Equipment Regulations 2002
- Provision and Use of Work Equipment Regulations 1998
- Lifting Operations and Lifting Equipment Regulations 1998
- Control of Substances Hazardous to Health Regulations 2002
- Control of Asbestos at Work Regulations 2006
- Reporting of Injuries, Diseases and Dangerous Occurrences 1995
- Fire Precautions (Workplace) Regulations 1999
- Ionising Radiation Regulations 1999
- Workplace (H&S,W) Regulations 1992
- Health and Safety (First Aid) Regulations 1981
- Safety Representatives and Safety Committees regulations 1997

- The Control of Noise at Work regulations 2005
- Construction (Design and Management) Regulations 2007
- Construction (Health, Safety and Welfare) Regulations 1996
- Construction (Head Protection) Regulations 1989
- Fire Precautions Act 1971
- Working Time Regulations 1998
- Working in Confined Spaces
- Batteries and Accumulators Containing Dangerous Substances Regulations 1994
- Safety Signs Regulations 1998

Etc., etc., plus many safety related:-

Environmental Protection, Pollution Control, Waste Management, Employment, Carriage of Flammable Goods, Product Safety, Road Traffic, etc., Regulations.

4.3.4 Supporting Documentation

Additional information has been prepared in order to assist in adhering to this Policy. Reference should therefore be made to the following groups of documents:

a) Documents Directly Associated With This Policy
These comprise the allocation of health and safety responsibilities within the Company and the general arrangements for implementing the policy.
b) Safe Systems of Work
These comprise the rules and conditions for carrying out specified activities.
c) Health and Safely Information
Information about matters such as risk assessment, first aid procedures etc.
d) Forms & Miscellaneous Items
Standard forms are used for various aspects of Health and Safety Management. These include such items as Risk Assessments (both Generic and Site Specific), Safety Audit Checklists, Employees Handbook etc.

4.3.5 Policy Review

This Policy and its associated Documentation will be reviewed following changes in legislation, changes in the Structure of the Company, in light of additional Knowledge and information becoming available, and in any event Annually.

4.3.6 ADT Related Health and Safety Documents

In addition to this general policy on Health and Safety, the Company has prepared the following policies relating to specific Health and Safety related topics:-

- Electrical Safe Working Practice.
- Manual Handling Operations.
- Personal Protective Equipment.
- Work Equipment.
- COSHH.
- Asbestos.
- Accident Reporting, Investigating and Recording.
- Fire Precautions.
- Ionisation Radiation & Radioactive Devices.
- Workplace Planned Inspections.
- Permit to Work.

	Ref.	Issue	Title
4.3.7	HSS2	0	Electrical Safe Working Practice – Electricity At Work Regulations 1989
4.3.8	HSS3	2	Manual Handling Operations
4.3.9	HSS5	0	The Personal Protective Equipment Regulations 1992
4.3.10	HSS6	0	Work Equipment
4.3.11	HSS7	0	Control of Substances – Hazardous to Health (COSHH) Regulations 2002
4.3.12	HSS8	0	Asbestos – The Control of Asbestos at Work Regulations 2012
4.3.13	HSS9	0	Accident & Incident Reporting, Investigating & Recording
4.3.14	HSS10	3	Fire Precautions
4.3.15	HSS11	0	Ionisation Radiation & Radioactive Devices
4.3.16	HSS12	0	Workplace Planned Inspection
4.3.17	HSWI3	0	Operation of the Permit to Work Procedure

ELECTRICAL SAFE WORKING PRACTICE – ELECTRICITY AT WORK REGULATIONS (1989)

Ref:	HSS2
Issue:	0
Page:	1 of 7

IMPORTANT NOTE: This document is to be considered UNCONTROLLED unless either a Controlled Copy Number is present above and is not marked "uncontrolled" or the document is being viewed live on the Company Intranet System. To check that this document is the latest issue and to view a full list of approvals for this document check the Company Intranet System. This document is confidential and should be treated accordingly; please use confidential waste when disposing. It is an individual responsibility to ensure that only current issue Management System Documentation is followed.

1 INTRODUCTION

1.1 The principle items of legislation governing our handling of electricity at work are the **Electricity at Work Regulations 1989** which deal with electrical safe working practices and the **Provision and Use of Work Equipment Regulations 1998 (PUWER)** which relate to the safety of all equipment (electrical or otherwise) supplied and/or used by employees in the workplace. This Company Health & Standard is intended to provide a basis for statutory compliance within the Company addressing the most commonly encountered electrical requirements. It must be pointed out however to the reader that other Acts, Regulations and codes are also applicable to electrical work including, but not confined to, **the Electrical Equipment (Safety) Regulations 1994 (EESR)** that addresses the safety standards of electrical equipment supplied into the domestic market (some of which may be supplied by and some of which may obviously become tools or equipment used by the Company) and the **IEE Wiring Regulations 17th Edition** which define the installation standards applicable to work undertaken by our field engineers.

1.2 The **Electricity at Work Regulations 1989** have been in effect since 1st April 1990 and at that time they revoked, replaced and extended the provisions of the 1908 and 1944 Electricity Regulations. This document lays down the standard that shall be adhered to within the Company to ensure safe working practice and compliance with this current legislation.

1.3 The onus of the Regulations is on us, as an employer, to assess those work activities that may be affected by electricity. The criteria which must always be considered is whether work on or near electrical systems gives rise to potential danger and the risk of personal injury. Wherever and whenever this is the case, safe-working practices must be devised and observed

1.4 The three key areas to be considered in the Company are:-

- The safe condition of electrical appliances supplied to, controlled, or used by employees.
- The work activities of employees or contractors, on or near electrical equipment, on Company premises.
- Servicing, Maintaining or installing electrical equipment by Company employees on our customer's premises.

In practice, where a general risk assessment has been properly conducted and reviewed in compliance with Health and Safety Standard No1, the electrical hazards associated with most work activities will have been identified and addressed. Specific *Safe Working Practices*, *Work Instructions, or Safe Systems of Work* should be included in the management controls required.

1.5 **'Live'** in the context of these regulations relates to equipment connected to a source of electricity at a dangerous potential. (Although not defined in the 1989 Regulations, 'lethal potential' is generally understood to include all voltages above 50V AC or 120V DC, in dry

conditions - see British Standard PD 6519. 'Dangerous potential' may be considered as excluding voltages below 30V AC or 60V DC and limited current).
'Live' also implies that the live parts are exposed.

'Dead' means not electrically live or charged.

'Disconnected' describes equipment or part of an electrical system that is not connected to any source of electrical energy.

1.6 The regulations impose an absolute duty on employers and employees alike to comply with the provision of the legislation in all matters within their control; contravention of this standard could therefore result in both legal proceedings and/or disciplinary action.

2 OUTLINE OF REQUIREMENTS

2.1 ELECTRICAL EQUIPMENT AND APPLIANCES

2.1.1 All electrical equipment, systems and appliances including connectors such as plugs and sockets must be suitable, properly designed and constructed, installed and sited so as to prevent danger whilst performing their specific function.

As employers, we should consider all reasonably foreseeable conditions of application, such as testing, commissioning, operation and maintenance, along with the manufacturer's equipment rating and electrical loading guides.

2.1.2 The EHS Building Owner / Senior Manager at each Company premise, with ultimate responsibility for Health and Safety performance at the Branch or office, should assign Facilities, Administration, Technical, Installation or Service Managers to ensure that a suitable and adequate programme of inspection is carried out on all appropriate electrical equipment within their area of responsibility.

This programme of safety inspections will ensure that all portable and fixed electrical appliances are regularly and properly checked ('in-house' or externally) by competent person(s) to ensure that the Regulations are fully complied with.

2.1.3 A register of portable and fixed electrical appliances and a record of successful inspections should be maintained at branch level. This record should include details of the competent person who carried out the inspection. The record document may be in a form as supplied by a testing contractor or in the case of field engineers equipment, HSF2.2 may be used for each operational unit.

2.1.4 Every portable or fixed electrical appliance must be clearly and individually identified and be labelled to indicate the test status and last test date (or next test due). Appliances should not be used after re-test dates have passed. New appliances should be added to the asset register along with the date of purchase, immediate testing of these new appliances is not normally required until they reach the required test period.

2.1.5 The intervals for inspection/tests may be determined by the Company and are based on factors such as the type and use of the electrical equipment, the likelihood of faults arising and the safety consequences of 'wear and tear', or damage. Legislation does not specify the regularity required. Recommendations on inspection/testing frequencies are however published by the Health and Safety Executive and these vary from 6-12 months for Class 1 earthed equipment (e.g. electric kettles, floor cleaners and other hand held equipment, etc.) to 2-4 years for double insulated rarely moved equipment such as photocopiers, printers,

etc. In order to create a simple standard approach HSF2.2 is issued for guidance within the Company. Any deviation from this should be supported by a note on records.

Where there is reason to suspect that individual items are damaged or faulty they should be removed from service until repaired/tested.

2.2 WORK ACTIVITIES

2.2.1 Every work activity on or near electrical systems, at any Company or at any Customer's premises, by employees or contractors must be carried out in such a way that it does not to give rise to danger. In almost **every** situation this will mean working on **'dead'** equipment, observing **'safe systems of work'** and if appropriate with 'permit to work' procedures in operation. No system or part of a system shall be worked on whilst that part is 'live' unless there is a totally justifiable reason for doing so and only then when the requirements of the Electricity at Work Regulations 1989 are fully observed (see 2.2.5 under). **Time or cost savings or making the job 'easier' are not legitimate reasons for working 'live'** or for using unconventional or irregular isolation or disconnection methods.

2.2.2 **Safe Systems of Work** are required whenever work on or near electrical conductors is undertaken.

Field Line Managers (Service or Installation) are responsible for ensuring the adequacy and appropriateness of 'Safe systems of Working' adopted by engineers.

In the case of simple straight-forward servicing tasks when working on equipment previously made 'dead', a competent person with a knowledge of generic risk assessment, together with the ability and training to be able to recognise potentially hazardous situations and with appropriate experience of the process and equipment, should be able to adopt a 'Safe system of Work' without the need to document each separate occasion.

In the case of more complicated operations a documented system of work providing an auditable record is advisable.

In either case, the probable elements of the safe working system components and the factors for consideration are listed below for the guidance of anyone required to devise a safe system of working:-

- Co-ordinating the different work activities or different companies on site.
- The layout, arrangement or location of plant and appliances.
- The method of using any machines or plant.
- Means of Access (temporary or permanent), working position, confined space, etc.
- The method of carrying out any particular process, including electrical isolation.
- The sequence in which the work is to be carried out.
- Use of or likelihood of encountering hazardous substances.
- The instruction of trainees or others in particular tasks which are outside their normal experiences.
- The provision of any warnings, notices, etc.

The system of work shall:-

- Allow only those persons who possess the appropriate competencies to work on or near electrical equipment or systems.

- Indicate clearly the limits assigned to the work. Make clear what levels of competence are required to carry out the work safely and the level of control required over isolation and re-connection of supplies.

2.2.3 **Permit to Work** - Whenever there is a special need to co-ordinate potentially hazardous operations or processes, the operation of a 'permit to work' system should be considered. (HSF2.1).In some cases this may arise from the simultaneous activities of our customer or other contractors working at the same site or it may arise from the nature of the working area or environment.

A typical 'safe system of working' will require the person in charge of the site to allow work in potentially hazardous situations only when written authority (i.e. the permit to work) has been provided and then only subject to specific conditions, limitations and restrictions.

In the context of this Company H&S Standard a 'permit to work' would normally be intended to ensure electrical safety but it must be borne in mind that other hazardous situations, some with an equal or greater potential for harm than simply a competent engineer working on electrical equipment, may determine the need for a 'permit to work' and/or the degree of control required. The safe system of work that is devised and the conditions and limitations imposed by the permit to work must consider all risks.

The permit should clearly state the period of its validity, the potential hazards and the action that must be taken to prevent accidents.

In most cases where a permit to work system is operated in connection with the Company's field operations, the 'person in charge of the site' will be the Company's customer or a main contractor and it will be they who issue, authorise and control the 'Permit to Work' System. In some cases, e.g. on the Company's own premises where hazardous processes are being carried out by a building maintenance sub-contractor, or on sites where an adequate system is not operated by a customer, it may be necessary for the Company to issue and operate under a permit to work.

Permits will be issued/authorised by a person with authority over the circumstances or conditions of working and may be requested by the person(s) carrying out the work to whom it is issued. Both parties must clearly understand the precautions to be adopted. Under no circumstances would a person requesting a permit also authorise it. The person to whom the permit is issued should however sign to confirm that the conditions and limitations imposed on his work have been agreed/explained/understood.

2.2.4 **Electrical Isolation -** It is the Company's policy and a requirement of the law that all work on electrical systems, except where absolutely unavoidable (such as when diagnostic testing and adjustment of equipment is required - see 2.2.5 below.) is carried out 'dead'. Ideally this should include disconnection & actual isolation of the equipment from the power supply (e.g. by removal of the fuses) rather than just switching 'off'. In order to prevent inadvertent reconnection, lockable isolation mechanisms are preferred and these should be locked off and clearly marked as such whilst work is carried out. Only those engineers in possession of 'lock out' kits will lock off the circuit breaker in the distribution board, if required with a padlock and tag. Engineers that have not been given 'lock out kits' are specifically informed not to enter the distribution boards and work must be carried out by an engineer with a 'lockout kit . Equipment should be proved dead at the point of work before work commences. If there is any doubt as to the status of equipment it must be assumed that it is 'live' and treated accordingly.

2.2.5 Work on or near 'Live' conductors

In order for any work to be undertaken on or near 'live' conductors, by law, all three of the following conditions must be satisfied, these are:-

(a) It must be **unreasonable** in all circumstances **for the conductors to be 'dead'.** And
(b) It must be **reasonable** in all circumstances for the **work to be carried out on or near the live conductors.** And
(c) Suitable **precautions must be taken** to prevent injury.

Where such work is carried out, only authorised persons shall be allowed in the immediate vicinity and only competent persons may actually carry out the work and then only within strictly defined limits. It has been deemed necessary to retro fit a plastic mains terminal cover on the mains connector block to prevent accidental connection with electricity. This will be done on every new installation and every inspection and left in situ.

2.3 LONE WORKING

Many situations exist where Service or Installation Engineers are required to work alone. Much of this work involves the repair and maintenance of mains operated electrical equipment 'in situ' on customer's premises. Generally, installation, repair and maintenance work would be carried out on electrically isolated equipment wherever possible with fuses removed, etc. (i.e. disconnected & 'dead'). It may however be necessary to perform some 'live' diagnostic testing with equipment covers removed. This shall only be undertaken by a competent person, using appropriate and approved test equipment, in strict adherence to specific rules and to a *Safe System of Work*. Engineers working alone must be fully aware of these limitations. They must understand that this may restrict the activities that can be performed without accompaniment and they must be competent to recognise a potentially hazardous situation.

Arrangements should be made for a customer representative to accompany engineers at remote workplaces, particularly during testing. If the work is likely to be of extended duration, frequent visits to the workplace by a customer representative (not exceeding 30 minutes) would be acceptable. Where 'permit to work' systems are in place the arrangements regarding accompaniment should be included in the documentation.

2.4 COMPETENCE OF PERSONS

The minimum level of competence required of a Company Engineer working on wiring or equipment connected directly into a customer's 220/240 volt AC distribution system is:-

- A qualification to City and Guilds, Electrical Installation Practice, Parts 1 & 2 and training on 16th Edition, IEE Regulations, equivalent or higher.
- Appropriate and adequate experience.

A 'Competent' person for working on Company equipment which is, or will be, connected to an appropriate mains outlet or fused spur provided by a customer, is a person having;-

- An adequate technical knowledge of electricity.
- An adequate experience of electrical work.
- An adequate understanding of the equipment or system to be worked on and practical experience of that type of equipment.
- An understanding of the work and the precautions needed to be taken to prevent injury.

- The ability to recognise at all times whether it is safe to continue with the work.

3 ACTION POINTS

3.1 Each General Manager / Senior Manager for the Branch/Office will identify person(s) who will be responsible for:-

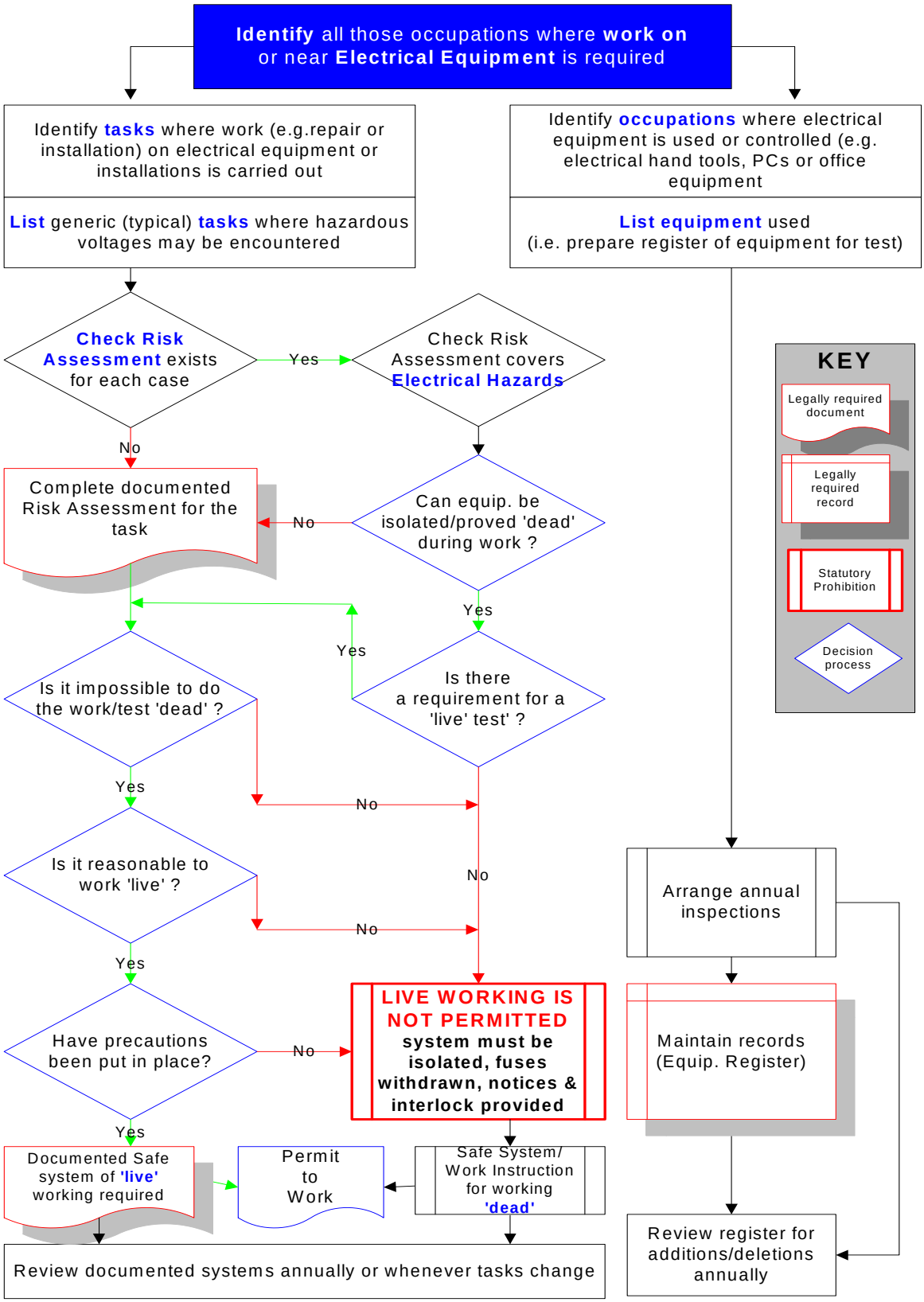
- The inspection/certification and recording of checks on electrical appliances and systems used by employees.
- The risk assessments associated with work activities on or near electrical conductors.

3.2 Those with assigned responsibilities will then:-

- Identify and prepare a register of electrical appliances that are supplied to, used or controlled by employees. This may be in the form suggested and attached to this document HSF2.2 or an appropriate form supplied by the inspecting contractor.
- Arrange for inspection of electrical appliances to be conducted, when due, and recorded.
- Each location should maintain a record available for inspection, whenever required.
- Identify occupations who work on electrical equipment and then the individual tasks where work on or near electrical hazards is required.
- Review risk assessments to ensure all tasks are adequately covered. If necessary, assess separately.
- Ensure documented safe systems of work are available for all tasks, where appropriate.
- Ensure 'safe systems of work' are appropriately communicated to appropriate employees and are being observed.

NOTE: Records may be in the form of any type of media such as hard copy or electronic media, where electronic media is used, ensure there is adequate provision for backup and recovery in accordance with the current PC policy. Any stated record retention times are minimum retention times only. All records within the required retention period should be EASILY recoverable.

4 PROCESS FLOW TO ENABLE ELECTRICAL HAZARDS ASSOCIATED WITH WORK ACTIVITIES TO BE CONTROLLED



Safety Standard

MANUAL HANDLING OPERATIONS

IMPORTANT NOTE: This document is to be considered UNCONTROLLED unless either a Controlled Copy Number is present above and is not marked "uncontrolled" or the document is being viewed live on the Company Intranet System. To check that this document is the latest issue and to view a full list of approvals for this document check the Company Intranet System. This document is confidential and should be treated accordingly; please use confidential waste when disposing. It is an individual responsibility to ensure that only current issue Management System Documentation is followed.

1. INTRODUCTION

1.1 **The Manual Handling Operations Regulations 1992** came into force in January 1993 and subsequent minor amendments has taken place. The Regulations focus on the need to reduce the high incident of manual handling injuries and the significant amount of time lost from work from this cause.

For Ireland the Manual Handling of Loads covered under Chapter 4 Part 2 of the Safety Health & Welfare at Work (General Application) Regulations 2007 apply.

The key areas for early consideration include:

- Identification of all occupations where manual handling tasks are carried out by Company personnel, while at work.
- Avoidance of hazardous manual handling tasks, so far as is reasonably practicable.
- Assessment of manual handling tasks.
- Identification of measures to eliminate the hazard or reduce the risk of injury to a tolerable level.

1.2 This Health and Safety Standard highlights the main requirements of the Regulation and gives specific guidance on how we, as a company, will meet those requirements and, if required provide evidence of compliance.

2. OUTLINE OF THE REQUIREMENTS

The Regulations apply to the manual handling of loads by human effort. Manual handling will include transporting and supporting a load, as well as lifting, putting down, pushing, pulling, carrying and otherwise moving a load.

The main requirement of the Regulations is that the Company must, as far as reasonably practicable, avoid the need for our employees to undertake any manual handling operations which could involve the risk of them being injured. The avoidance of hazardous manual handling tasks may involve the use of mechanical lifting/handling aids or equipment or may necessitate a change to working procedures or more.

However, where it is not reasonably practicable to avoid necessary manual handling operations, more (or more able) people may be required to perform or share the required manual handling task. In any event, employers must take steps to reduce the risk to injury, as follows: -

2.1 Identify those occupations where manual handling tasks are undertaken. In many cases, these will have been identified from previously completed General Risk Assessments.

2.2 Make a suitable and sufficient assessment of the task which should be fully documented if a significant risk is suspected and should take into consideration the actual handling task being performed, the weight and nature of the load, the working environment and the capability of the individual undertaking the task.

2.3 When required, manually lifting of objects should be limited to 18 kg for a one person lift in all cases except where a ladder exceeds weight but has wheels to manoeuvre or where a single item exceeds that limit and cannot be broken down into a lighter load. In such cases physical or mechanical aids should be used wherever practical.

2.4 Prior to moving a load, ensure the intended pathway is clear and unobstructed to facilitate safe travel.

2.5 When performing a two-person move, ensure clear communications are maintained to allow for safe and effective movement of material.

2.6 Ensure that appropriate PPE is worn during lifting, i.e. gloves, safety boots if required.

2.7 Consider not only the tasks which are to be carried out at Company locations (e.g. office, storage or warehouse environments) but also those tasks which are to be carried out by Company employees away from Company premises, (e.g. Servicing, Installation, exhibition sites, etc.)

2.8 An assessment should be carried out by a person who has practical understanding of the type of manual handling tasks to be employed, knowledge of the types of loads to be encountered, and knowledge of the working environment in which the tasks have to be performed. This may in some cases be the person carrying out the task or his/her Line Manager - Section 3 of this Standard gives guidance on carrying out a Risk Assessment.

2.9 Records of assessments should be maintained and readily accessible within the management unit involved in the activity.

2.10 The results of the assessments should be made available to all appropriate employees. Employees must be made aware also of the weight of each load they are expected to handle and which is the heaviest side of any load where the centre of gravity is not positioned centrally. (Ideally, this should be apparent from packing / markings).

2.11 Employees must also be made aware of their responsibility to comply with safe systems of work once these are established and to make use of any mechanical provision.

2.12 If it's not possible to eliminate the lift, consider automating the lifting task or using a mechanical lifting device. Devices such as hoists, cranes and manipulators can eliminate the forces on the spine associated with manual materials handling. Therefore, the likelihood of back injuries is also reduced.

2.13 For New or Expectant mothers please refer to HSG1

3. GUIDANCE ON CARRYING OUT A MANUAL HANDLING RISK ASSESSMENT

3.1 The assessment is to be used as a structured way of analysing the degree of risk inherent in specific manual handling activities and as a means of prioritising the necessity for controls to be implemented to reduce the risk of injury to a tolerable level.

3.2 It is desirable that risk assessments are carried out by competent persons who understand the activities being assessed and are a necessity for more complex handling tasks.

3.3 Documented assessment checklist (HSF3.1) and detailed assessments, where necessary, should be retained together with any relevant General Risk Assessment.

NOTE: Records may be in the form of any type of media such as hard copy or electronic media, where electronic media is used, ensure there is adequate provision for backup and recovery in accordance with current I.T. policy. Any stated record retention times are minimum retention times only. All records within the required retention period should be EASILY recoverable.

Safety Standard

PERSONAL PROTECTIVE EQUIPMENT –THE PERSONAL PROTECTIVE EOUIPMENT REGULATIONS (1992)

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1 INTRODUCTION

1.1 The **Personal Protective Equipment (PPE) at Work Regulations** came into force on the 1st January 1993. The Regulations are made under the **Health & Safety at Work (HSW) Act 1974** and apply to all workers in Great Britain.

1.2 The legislation replaces pre-1974 law such as the Protection of Eyes Regulations and part of the Factories Act and Offices Shops and Railways Premises Act; it amends other regulations made under HSW Act like COSHH and Noise at Work Regulations.

The key areas for early consideration include:

- Identification of the need for PPE
- Assessment of the suitability of PPE
- Provision of training for PPE users

1.3 This Health and Safety Standard highlights the main requirements of the Regulations and gives specific guidance on how we, as a Company, will meet those requirements.

2 OUTLINE OF THE REQUIREMENTS

2.1 The Personal Protective Equipment (PPE) at Work Regulations require us, as employers, to provide suitable PPE to our employees wherever there is a risk to their health and safety that cannot be controlled by any other means.

2.2 The risk assessment carried out under Management of Health and Safety at Work Regulations for all tasks with significant risk (see Company Health and Safety Standard No. 1 – HSS1) will identify those hazards that cannot be adequately controlled by 'preventative' means. (e.g. elimination, substitution, engineering controls, training, safety rules, systems of work, permits, etc).

2.3 Employers then need to make an assessment to ensure that the **choice of PPE** is correct for the particular risks involved and for the circumstances of its use. The assessment will need to be recorded (on form HSF5.1) and would normally be retained on company intranet, available for employee viewing. Guidance is given in Section 4 of this Health and Safety Standard.

2.4 Care must be taken that if more than one item of PPE is to be worn, the different items of PPE must be compatible - e.g. ear defenders with goggles or hard hat.

2.5 Everyone involved in the use and maintenance of PPE must be appropriately trained or briefed in order that they may effectively use the PPE provided to protect him or her against specific work place hazards. Normally, the nature of the PPE issued in the Company would require a simple briefing by immediate line management and this should be recorded.

2.6 PPE will be "personal" issue or retained at company locations depending upon usage and conditions under which it is used. Personal issues will be recorded and records retained. (See form HSF5.2)

2.7 Branches will need to ensure that adequate facilities are available to protect any centrally held stock of PPE from contamination, loss or damage e.g. pegs for clothing, fall arrest equipment or safety helmets, cases or cabinets for goggles/safety glasses and carry out suitable inspection of that PPE. (See form HSF5.2)

2.8 Every employee shall use and maintain the PPE identified as required for each task they perform in accordance with the training or briefing they have received. They must report any lost or defective PPE immediately to their line manager.

2.9 All PPE must comply with European Standards on the design, manufacture and construction of PPE and must display a "CE" mark.

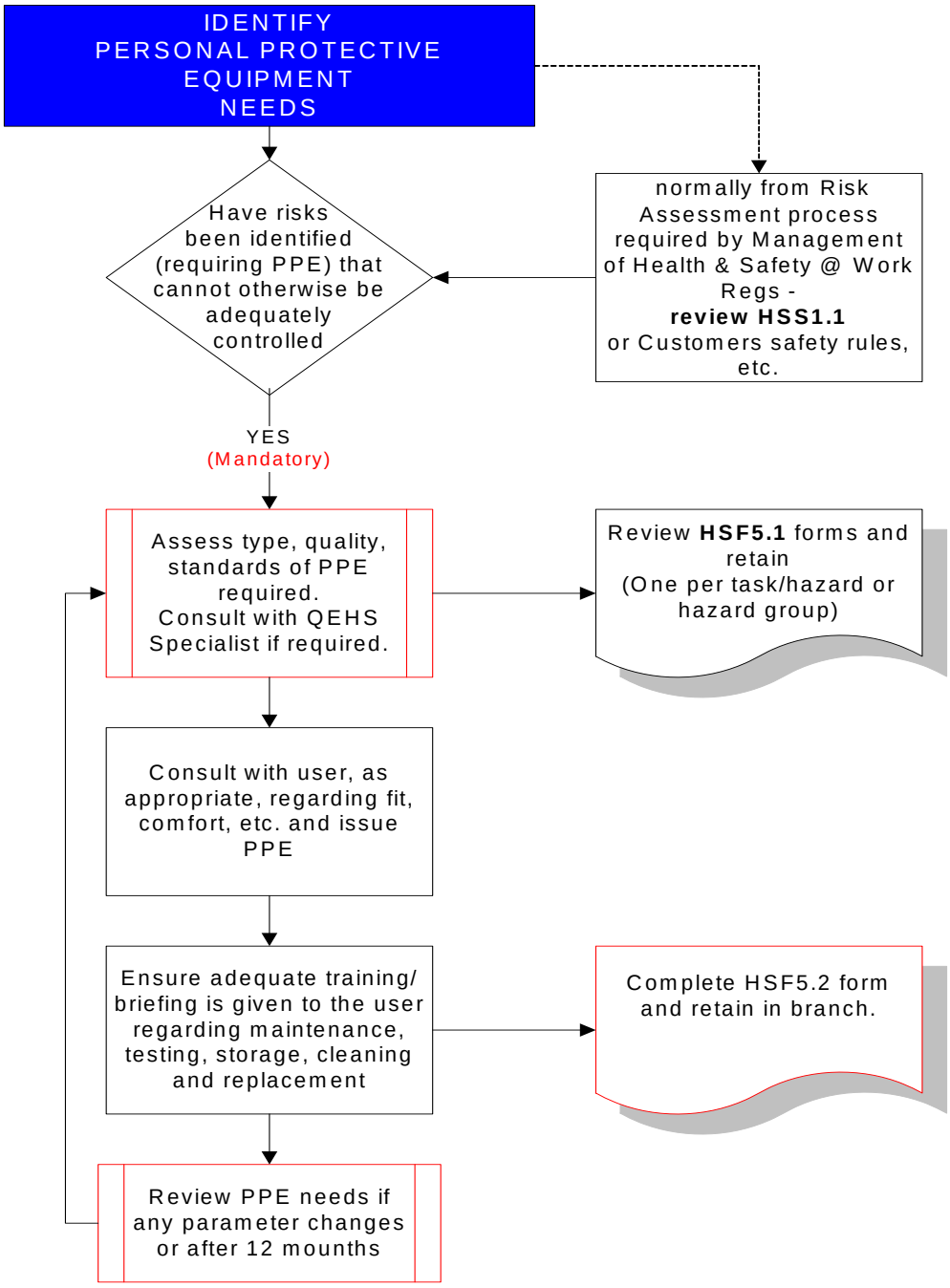
3 ACTION POINTS

3.1 Branches should:

- Identify a competent person who will conduct the assessments.
- Identify those at risk in the work place whose exposure to risk cannot be controlled except by provision of PPE. Normally, Risk Assessment documentation will assist in this respect.
- Identify those parts of the body endangered and select the appropriate type of PPE from the range of "approved" equipment available, which is suitable to the individual.
- Ensure records are maintained for the issue of all items of PPE, using form (HSF5.2). Also record the inspection due date for every safety device on (HSF5.2). The frequency of inspection may differ due to device type and use.
- Ensure, where appropriate, adequate facilities are provided for the correct storage of PPE. (This also includes within vehicles).
- Plan and provide training / briefing for employees in the proper use, maintenance, testing and cleaning of PPE. Pre-use inspection is mandatory for such items as fall arrest or working harnesses and respiratory protection.
- Make arrangements to ensure that employees report the loss or defects in personal protective equipment. The arrangements must ensure that defective PPE is repaired or replaced before the employee concerned re-starts similar work.
- Refer to Guidance Document (HSG14) for guidance on types of specific PPE requirements.

4 PROCESS FLOWCHART

Outlining the activities necessary to identify the need, type and control the issue of Personal Protective Equipment: -



NOTE: Records may be in the form of any type of media such as hard copy or electronic media, where electronic media is used, ensure there is adequate provision for backup and recovery in accordance with current I.T. policy. Any stated record retention times are minimum retention times only. All records within the required retention period should be EASILY recoverable.

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1 INTRODUCTION

The two main sets of regulations covering the safe use of work equipment are the Provision and Use of Work Equipment Regulations 1998 (PUWER) and the Lifting Operations and Lifting Equipment Regulations 1998 (LOLER)

The primary objectives of the Provision and Use of Work Equipment Regulations (PUWER) are to ensure the provision of safe work equipment and its safe use. The definition of 'work equipment' is very broad and covers individual machines, tools and appliances. The term 'use' includes any activity in relation to work equipment such as stopping, starting, operating, repairing, transporting and cleaning the equipment.

The latest revision of PUWER came into force on 5 December 1998 and sets out provisions for the management and use of all kinds of work equipment. It also contains specific requirements relating to the safe use of mobile work equipment.

LOLER relates to the test, examination and inspection of all kinds of lifting equipment and came into force at the same time.

The key areas for consideration in both regulations include: -

- Review the selection, suitability and maintenance of work equipment.
- The use of the risk assessment is to identify hazards in the use of work equipment.
- Identification of any training needs.
- Review of work equipment procurement policy.

2 OUTLINE OF REQUIREMENTS

The regulations require that employers select work equipment which is suitable for the work it is supposed to do and to ensure that it is used according to the manufacturer's instructions. The regulations also require employers to inspect work equipment where significant risks may result from incorrect installation, relocation, deterioration, or as a result of exceptional circumstances.

In addition, PUWER requires employers to assess the risks posed by mobile work equipment and install appropriate safety devices, such as adequate braking devices to enable mobile work equipment to brake properly on gradients, or protective cages to protect operators in the event of equipment rolling over.

LOLER applies over and above the general requirements of PUWER in dealing with the specific hazards and risks associated with lifting equipment and lifting operations.

Both sets of regulations require employers to carry out a risk assessment of lifting operations, including the selection and use of lifting equipment and the training of staff who operate it. The regulations also stipulate that lifting equipment must have adequate strength and stability for its proposed use

2.1 EMPLOYERS DUTIES

PUWER requires Tyco, as employers to:

- Ensure that all work equipment is properly selected, used and maintained at work.
- Take all reasonable steps to ensure that work equipment does not pose a risk to the health and safety of our employees.
- Inspect work equipment where significant safety risks could result from incorrect installation or relocation, deterioration, or as a result of exceptional circumstances.
- Assess all mobile work equipment such as fork lift trucks used in a workplace and install appropriate safety devices, such as adequate braking devices or protective cages to protect operators in the event of the mobile work equipment rolling over.

Responsibility for statutory compliance rests with each Line Manager within the area of their direct control, the National QEHS Manager as Health and Safety Champion, the Tyco board of directors and ultimately the President UK & Ireland.

Managers must ensure that all persons using work equipment are familiar with its correct use and are adequately supervised, if necessary.

2.2 EMPLOYEES DUTIES

All employees have a duty under the Health and Safety at Work etc Act (HSWA) to take reasonable care for the health and safety at work of themselves and any other people who might be affected by their acts or omissions. Under the HSWA, employees are duty bound to co-operate with their employers (and others) to enable them to comply with statutory duties and requirements.

Additionally, the HSWA states that employees must not intentionally or recklessly misuse anything provided in the interests of health, safety or welfare.

Employees are further obliged to:

- Correctly use all work items provided in accordance with any training and instruction they receive.
- Ensure that all safety rules are followed.
- Carry out a visual inspection prior to use and to report any defects in the equipment to their manager.

3 ACTION POINTS

The risk assessment process should be used to identify any areas of risk where this is not already documented.

Review current work equipment procurement processes to ensure the conclusion of risk assessment is given due regard.

Determine the levels of training and hazard awareness in the use of equipment by employees and line managers and plan to provide any additional and /or refresher training required.
Establish, or where they exist, observe safety inspection/maintenance procedures relevant to the work equipment used.

4 GUIDANCE ON MAINTENANCE AND INSPECTION

Every item of work equipment where there is significant hazard(s) associated with its use must be properly checked and maintained to ensure that it continues to operate correctly and does not pose a risk to those operating it.

Maintenance procedures must be carried out in accordance with any manufacturer's instructions and must be carried out by competent persons trained to carry out the work.

The following paragraphs represent some of the more common areas requiring attention within Tyco: -

4.1 PORTABLE APPLIANCE TESTING

All portable (electrical) appliances must be tested periodically (by a competent person) to ensure that they can be used safely. The maintenance required will be determined by the result of the safety inspection and testing programme. Frequency of testing depends upon the level of use, with equipment posing a greater risk or more exposed to wear and damage receiving a higher level of maintenance. Guidance on acceptable frequencies will be found in HSS2.

All portable electrical equipment must be logged for maintenance (See HSF2.2) and all new appliances entered into the maintenance programme.

4.2 FORK LIFT TRUCK INSPECTIONS

All forklift trucks must be inspected before daily use and the results documented on form. (HSF6.1).

4.3 BOILERS (Gas, Oil Fired)

Gas boilers must be thoroughly examined by a competent (i.e. Gas Safe registered) sub-contractor every 12 months and the maintenance record retained in relevant Tyco location.

4.4 LADDER INSPECTIONS

Each ladder or stepladder must be individually marked to avoid confusion. The 'scafftag' system or an alternative means of identification and an inspection schedule must be used. Ladders must be examined fully at least every six months and records of the inspections maintained (HSF6.3). However, the user should visually inspect every ladder, etc, before it is erected to ensure that there are no obvious defects that would make use of the ladder dangerous. Obvious defects will include broken, loose or turning rungs, excessive warping, broken or badly damaged stiles, missing rubber or suction feet, distortion etc. Ladders should also be carefully inspected after any fall or suspected overloading. Ladders must not be painted.

Any ladder found to be defective will be taken out of service immediately, marked clearly 'DEFECTIVE- DO NOT USE' and the fault reported to the Field Line Manager.

4.5 PODIUM INSPECTIONS

Each podium must be individually marked to avoid confusion. The 'scafftag' system or an alternative means of identification and an inspection schedule must be used. Podiums must be examined fully at least every six months and records of the inspections maintained (HSF6.4). However, the user should visually inspect every podium, before it is erected to ensure that there are no obvious defects that would make use of the podium dangerous. Obvious defects will include broken, loose or turning rungs, damaged outriggers, brakes and wheels. Podiums should also be carefully inspected after any fall or suspected overloading. Podiums must not be painted.
Any podium found to be defective will be taken out of service immediately, marked clearly 'DEFECTIVE- DO NOT USE' and the fault reported to the Field Line Manager.

4.6 HARNESS INSPECTIONS

Each harness, lanyard, 'cows tail' or other fall protection equipment must be individually marked to avoid confusion. This method of identification and an inspection schedule must be used. The harness and its associated equipment must be examined at least every six months and records of the inspections maintained (HSF6.5). However, the user should visually inspect the harness and associated equipment before it is used to ensure that there are no obvious defects that would make its use dangerous. Defects will include obvious tears, nicks or damaged stitching and oil/chemical contamination to the webbing. Harnesses and associated equipment should also be carefully inspected after any fall or suspected overloading.

Any harness or associated equipment found to be defective will be taken out of service immediately, marked clearly 'DEFECTIVE- DO NOT USE' and the fault reported to the Field Line Manager.

5 LIFTING EQUIPMENT

Risk assessments must be carried out for all lifting operations. Lifting equipment must have adequate strength and stability for its proposed use. The risks from positioning and installing lifting equipment need to be minimised and all equipment must be marked to indicate its safe working load.

Certain types of lifting equipment must have a statutory examination every six months under LOLER.

All harnesses that are either in the possession of engineers or in the branch are to be examined by an 'independent' competent person every six months. The records of these inspections should be recorded on Form HSF6.5 Harness Inspection Record.

Certain types of mobile work equipment, such as hoists, 'A' frames, lifts or reach trucks; etc. can roll on their side or overturn completely if operated unsafely. It is essential that all users of mobile work equipment such as mobile elevating work platforms are trained and competent to operate it, including emergency and evacuation procedures.

For details on Mobile Elevating Work Platforms please refer to procedure HSS36.

Any equipment found to be or suspected of being UNSAFE shall NOT be used, but must be referred to a supervisor who will decide whether it is to be replaced, scrapped or repaired.

5.1 LIFTS

All lifts must be thoroughly examined by a competent person every 6 months and records of inspection maintained in the branch.

5.2 EYEBOLTS

All eyebolts must be examined by a competent person every six months and records of inspection maintained in the branch.

6 ACCESS EQUIPMENT

6.1 USE OF LADDERS, STEPLADDERS AND MOBILE TOWERS

Falls from heights and particularly from ladders account for the majority of serious injury accidents in the security systems industry and the following is intended to emphasise the need for special attention in this area.

6.1.1 Extension Ladders

Tasks requiring the use of ladders shall be assessed and the result recorded. All hazards associated with use should be identified and the precautions and controls required shall be known and observed by all who may use ladders in the course of their work. (See HSF1.1 and the database of generic risk assessments available from the intranet).

In general, all ladders must be suitable for their intended use and must be to Class 1 Industrial or BSEN131 standard. The correct sized ladder should always be used. Ladders that are too short are dangerous. Ladders should never be placed on other materials to gain height, nor should they be supported on rungs e.g. across scaffold boards.

Employees must not use customer's ladders as they may not be fit for purpose. Only exceptions to this rule are in prisons and on board vessels, fixed loft ladders and in warehouse type premises when 'airplane style steps' are in situ.

All above must however be subject to pre-use checks and in date scafftags.

Metal ladders are good conductors of electricity and must not be used in the vicinity of overhead or other mains cables.

Ladders must be properly secured when in use. This can be achieved by either tying to the structure at the top or footed by a second person. All persons using ladders must be provided with an approved stabilising device, which must be used when it is not possible to tie or foot the ladder. Ladders must not be left unattended when pitched.

Where a ladder is used in a public place or where there is traffic, an area around the base should be 'roped off' and warning notices displayed.

Extension ladders must not be erected externally in high winds or adverse weather conditions.

6.1.2 Stepladders

Tasks requiring the use of stepladders shall be assessed and the result recorded. The precautions and controls required shall be known and observed by all who may use stepladders in the course of their work. (See HSF1.1 and the database of generic risk assessments available from the Tyco intranet).

Wherever possible, stepladders should be placed at right angles to the work. They must be fully extended, standing on firm and even ground with the stays locked.

The knees should not go above the top tread of the stepladder, unless using a platform stepladder.

Employees must not use customer's stepladders as they may not be fit for purpose. The only exceptions to this rule are in prisons and on board vessels.

All above must however be subject to pre-use checks and in date scaf-tags.

Stepladders must not be used to gain extra height from the top of a mobile scaffold, or any other working at height equipment.

6.1.3 Mobile towers

Tasks requiring the use of Mobile scaffold towers shall be assessed and the result recorded. The precautions and controls required shall be known and observed by all who may use Mobile towers in the course of their work. (See HSF1.1 and the database of generic risk assessments available from the Tyco intranet).

Mobile towers are structures that can be readily moved from place to place and are normally used for lightweight work on level ground.

It depends on the manufacturer's instructions for the tower height you are building. The base dimensions are determined by a complex calculation in EN1004 which takes into account lots of factors. The only way you can determine if the stabilisers are required and which size of stabilisers to use, is to look it up in the manufacturer's instructions schedule of components. Remember that you must fit stabilisers at the first opportunity in the build sequence and remove them at the end when dismantling.

Guard rails and toe boards must be fixed and all movement should be prevented by locking or chocking wheels when in the mobile platform is in place. Under no circumstance should a mobile scaffold be moved with a person on the platform or by a person on the scaffold pulling it along. Under no circumstance should items be thrown or tipped from the platform.

A visual inspection should be carried out before working to ensure that the tower is fit for purpose. If there is any doubt regarding the safety of the scaffold, the Line Manager must be consulted.

7 COMPANY VEHICLES

All employees have a responsibility to ensure their company issued vehicles are in a safe working condition at all times, this requirement extends to those employees that have opted out of the company car scheme and receive an allowance for the provision of their own vehicle. The following requirements therefore must be met with regard to these vehicles –

7.1 PRE USE CHECKS

Pre use checks are a basic un-documented check that is performed by the drivers of all vehicles and includes the following as a minimum –

- Tyres – visible check to ensure correct inflation, tread depth, tyre wall damage and whether objects are in-bedded within the treads.
- Lights – visual check to ensure all lights are working in the correct manner including indicators.
- Windscreen wipers – visual check to ensure the windscreen wipers are working and are able to clear the windscreen correctly. The washer fluid level should also be checked regularly.
- Load – When a load is being carried, whatever the size and weight, it must be secure.
- Seat Belts - All seat belts must be in full working order.
- Bodywork - Any defects in the exterior bodywork or the condition of the interior are to be recorded on an incident report form with details of the nature of the damage and reported to your manager.
- Ladders/ Stepladders – All ladders and stepladders must be secured by use of ladder clamps (Unless stored inside vans in specifically designed space).

7.2 VEHICLE AUDITS

The employing manager is responsible for ensuring vehicle audits are conducted on **ALL** of his/her employees' vehicles once every six months using the form HSF6.2 Vehicle Audit Inspection Checklist.

Records of these audits are to be maintained in a manner where they can be audited by either internal or external auditors.

8 DEFINITIONS

Work Equipment - any machinery, appliance, tool, access plant or installation for use at work.

9 IMPORTANT NOTE

All work activities with significant risk are to be assessed in accordance with HSS6, this includes the use of work equipment and nothing within this standard shall be taken as reducing or eliminating that requirement.

NOTE: Records may be in the form of any type of media such as hard copy or electronic media, where electronic media is used, ensure there is adequate provision for backup and recovery in accordance with the current PC policy. Any stated record retention times are minimum retention times only. All records within the required retention period should be EASILY recoverable.

CONTROL OF SUBSTANCES HAZARDOUS TO HEALTH (COSHH) – REGULATIONS (2002)

Ref:	HSS7
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Safety Standard

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1 INTRODUCTION

1.1 Control of substances Hazardous to Health Regulations originally came into force on 1st October 1989 and have been updated several times, most recently by the **'Control of Substances Hazardous to Health Regulations - 2002'** (In ROI – **' The Safety, Health & Welfare at Work (Chemical Agents) Regulations 2001'**).

1.2 The Regulations amplify and extend the general duty that exists under the **Health and Safety at Work Act 1974** (in ROI – **Safety, Health & Welfare at Work Act 2005**) for every employer to make arrangements for the safe handling and storage of articles and substances. It applies to all substances used at work which are hazardous to health except certain specific materials (see below) that are covered by separate legislation.

1.3 Substances hazardous to health and requiring control may be in the form of:-

- gases
- vapours
- liquids
- fumes and dust (or mixtures containing such components)
- In addition 'by-products' may be produced by a process which are hazardous to health

If there is a potential for inhalation, contact with skin or eyes, or ingestion of any substance into the body, then its risk to health should be assessed.

The regulations do not apply to Lead or Asbestos or Radioactive materials, each of which has separate specific legislation. Nor do the regulations in general apply to substances that are hazardous solely because they are:-

- Stored or used at High pressure or High or Low temperature, unless these substances are otherwise hazardous.

2 OUTLINE OF REQUIREMENTS

The main requirements of the Regulations are as follows: -

2.1 It is a legal requirement to carry out a suitable and sufficient assessment of the health risks associated with any hazardous chemical substances used at work.

2.2 This assessment should be conducted by a competent or knowledgeable person and should identify the nature and degree of risk and determine the control measures, monitoring requirements and health surveillance necessary. This assessment may include reference to appropriate information from manufacturer or supplier. Documented assessments should be reviewed if changes to the work occur, or at yearly intervals as a minimum requirement.

2.3 All exposure to substances hazardous to health should be prevented or controlled, wherever possible, by means other than the provision of personal protective equipment.

2.4 If the measures taken to control exposure are not adequate then suitable personal protective equipment should be used in addition.

2.5 Where the actual level of exposure to a substance cannot be determined from information available and exposure to the substances is likely to approach the specified exposure limits; it is necessary that Air Monitoring should take place (Contact the Regional QEHS Specialist).

2.6 It is a requirement that when employees are liable to be exposed to certain substances hazardous to health, that regular health surveillance is carried out.

2.7 Where control measures are necessarily used (e.g. ventilation equipment, respiratory protective equipment, etc.) to reduce exposure to a substance hazardous to health, it shall be properly used, maintained and regularly checked.

2.8 Any employer who undertakes work that may expose any of his employees to substances hazardous to health, shall provide adequate information, instruction and training about the risks to health that exist and the precautions that should be taken.

3 ACTION POINTS

3.1 The National QEHS Manager must nominate a knowledgeable person as custodian of a National COSHH Register. This register will be held at a central location and be made available via the Intranet. The Register consists of three types of document:-

- The COSHH Register HSF7.1
- Manufacturers Safety Data Sheets (obtained from suppliers on request)
- The Assessment Records (HSF7.2)

The person nominated shall be responsible for the maintenance of all three sections of this document.

3.2 On sites, where any hazardous chemicals are used, engineers should be provided with up to date copies of assessment records for any substances used or held by them on site. Any items bought onto Tyco premises by approved sub-contractors

3.3 All Branches and operations **MUST** ensure a system is in place to control the purchase or procurement of substances (see Section 4.1).

3.4 A manufacturer's safety data sheet (SDS) that lists the health hazards of the substance **MUST** be available for each item on the Substance Inventory. Suppliers of substances are required by law to provide such written information on request.

3.5 For each process or operation using or producing substances likely to be hazardous to health, a procedure/work instruction **MUST** be available, and an assessment must be carried out prior to the substance being used (see Section 4.2).

3.6 The assessment should detail any health risks associated with the use of the substances and the precautions/control measures that are necessary to ensure that any risk to the health of employees is minimised to a tolerable level. It may also provide guidance upon actions to take in the event of exposure.

3.7 Essentially, the SDS (Manufacturers Safety Data Sheet) will detail all the potential hazards associated with the basic substance whilst the company's separate assessment (HSF7.2) will consider and document the risks and controls associated with normal storage and use within the company.

For example; a substance such as 'Tippex' correcting fluid contains a solvent that is extremely toxic and continuous exposure to large quantities over a long period would be a completely unacceptable risk. Accordingly, it will be shown on the SDS as hazardous in relatively mild concentrations. However, when used as intended in a single small sealed plastic container for occasional correcting purposes it becomes an almost insignificant (and hence completely tolerable) risk. The main listing (the Inventory section of the register – (HSF7.1) must include all substances used or stored in a manner that gives rise, even in the event of accidental spillage, to a significant risk. The Inventory section of the register does not however need to include substances, which after assessment are not considered to give rise to any risk.

3.8 Where control equipment, e.g. local extraction/ventilation equipment is used to reduce exposure to any substance hazardous to health, a programme of regular checking and maintenance of equipment should be undertaken and records keep of such checks.

3.9 Local exhaust ventilation equipment being used to control a hazard **MUST** be checked weekly to ensure it is in working order, and a thorough examination must be carried out every 14 months. Records must be maintained.

3.10 The COSHH Register must be formally updated whenever a Supplier provides an updated Manufacturers Safety Data Sheet for a listed substance. Additionally, an updated SDS should be requested whenever substances appear to have changed.

3.11 The COSHH Inventory **MUST** be formally reviewed annually, by the nominated person, at the very minimum.

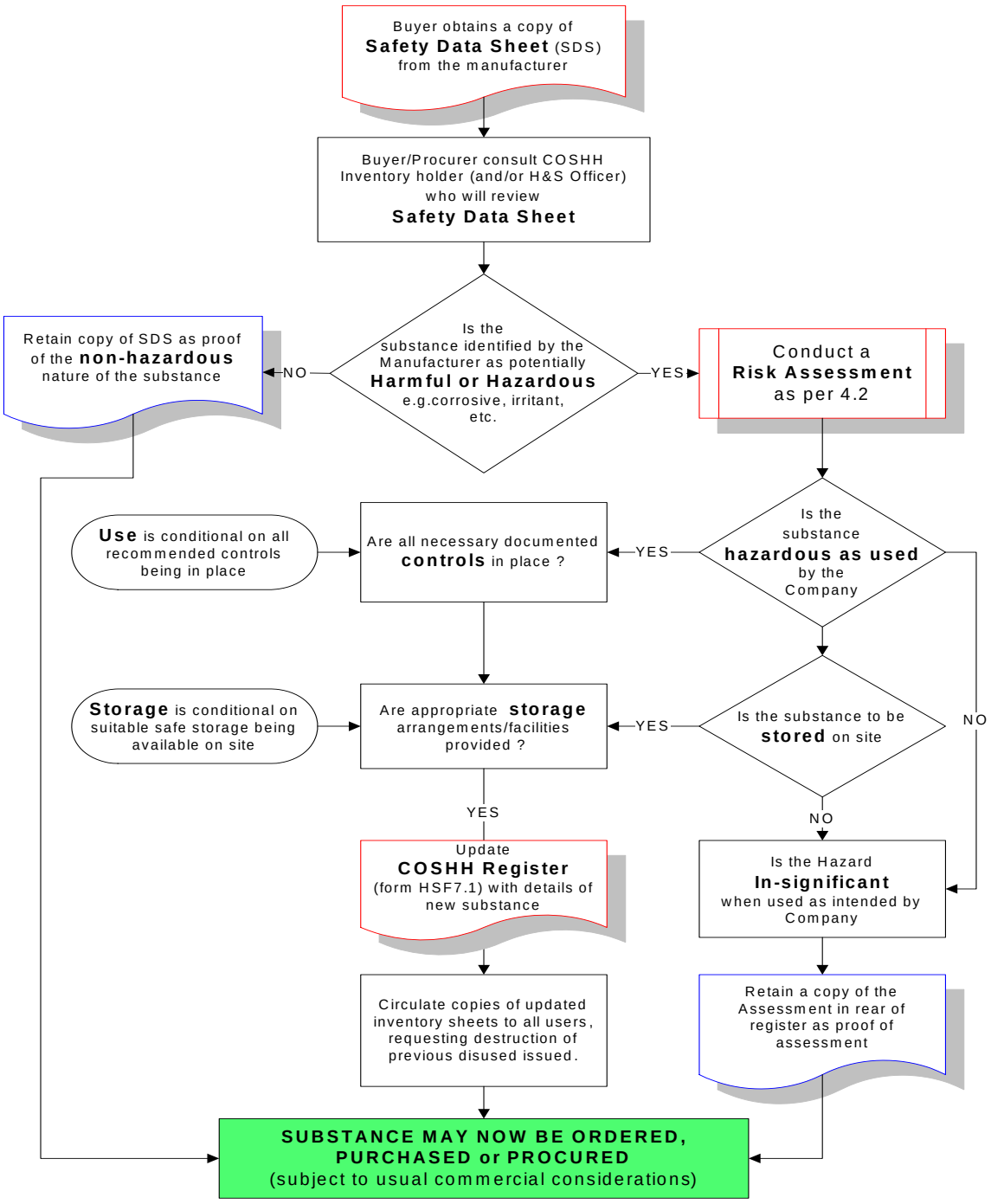
4 FLOW CHARTS DETAILING PURCHASING CONTROLS & ASSESSMENT

4.1 Purchasing Control Flow Chart

No substance is to be purchased, or allowed onto a Company site or used on a customer's site by employees unless it is listed in a current authorised COSHH Inventory (Register).

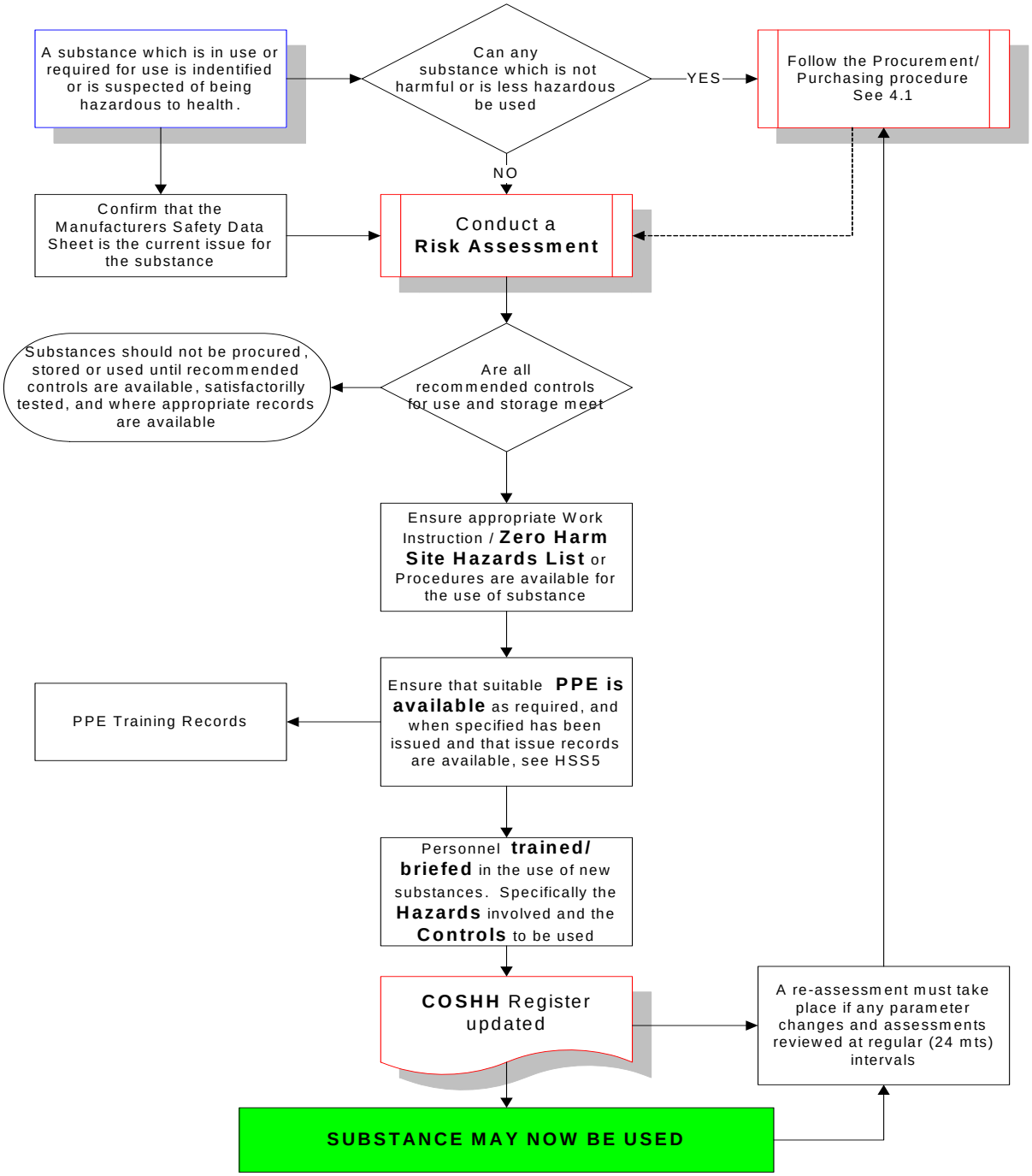
Note: Buyers will not order an equivalent substance from a different supplier or the same substance in a different form from the same Supplier, without following the procedure detailed on this flowchart.

When a substance is identified as required for use by company employees or on company premises, the following assessment process must take place before procurement: -



4.2 Assessment / Use of Substances Hazardous to Health – Flow Chart

If a substance identified as potentially 'Hazardous' is required to be used on any site or location, the following action/assessment must take place:-



4.3 A completed example of COSHH Assessment Record t Record

COSHH ASSESSMENT
H/E 4.3.1 Q 7.2.1(c) PAS 99 4.3.1
HSF7.2 Issue 1 CoSHH-gen-

ASSESSMENT TITLE				Ref No:	CoSHH-gen-
Process	What is the process or operations that the substance is used for			Assessed Date:	
Location	TYCO BRANCHES AND CUSTOMER SITES	Area	VARIOUS	Valid Until:	
People affected	TYCO PERSONNEL AND OTHERS IN VICINITY			Assessed By:	

SUBSTANCE INFORMATION

Product Name (code)	Manufacturer	Hazard Symbols

Amount Used	How many times per day	Duration	Workplace Exposure Limits		
			Name	STEL	TWA
Choose an item.	Choose an item.	Choose an item.			

	Please Tick			
Can a less hazardous substance be used to do the same job?	YES		NO	
Can a more environmental friendly product be used to do the same job?	YES		NO	
Is this substance being used with another substance?	YES		NO	
Do the operatives exposed to the substance require Health surveillance?	YES		NO	

TASK	CONTROL MEASURES
How it is used/applied	Simple statement of the precautions which are in operation, including type of containers, hazard markings, PPE, eye wash facilities etc.

HAZARD TO HEALTH IDENTIFICATION & EMERGENCY ACTION

Route of Exposure	Exposure Affects	Emergency Action
INHALATION	Possible symptoms experienced due to exposure	Brief guidance upon immediate first aid measures in the event of inhalation
SKIN	Possible symptoms experienced due to exposure	Brief guidance upon immediate first aid measures in the event of exposure/contact with skin
EYES	Possible symptoms experienced due to exposure	Brief guidance upon immediate first aid measures in the event of exposure/contact with eyes
INJECTION	Possible symptoms experienced due to exposure	Brief guidance upon immediate first aid measures in the event of injection
INGESTION	Possible symptoms experienced due to exposure	Brief guidance upon immediate first aid measures in the event of ingestion

OTHER PRECAUTIONS

Spillages	Simple statement of accidental spillage arrangements
Fire	Simple statement of fire arrangements
Storage	Simple statement of appropriate storage methods
Disposal	Simple statement of disposal requirements

PERSONNEL PROTECTIVE EQUIPMENT: ✓as required (state type required)

Eye Protection	SAFETY GLASSES	Overall/clothing	STANDARD ISSUE	Gloves	NITRILE (EN 374)
Mask/respirator	FILTER TYPE A	Safety Shoes	STANDARD ISSUE	Other	

ASSESSMENT OF RISK

Hazards to health adequately controlled with all control measures in place.			YES		NO
Remedial Actions if any:					
Overall Assessment Risk:		Assessors Signature:			

NOTE: Records may be in the form of any type of media such as hard copy or electronic media, where electronic media is used, ensure there is adequate provision for backup and recovery in accordance with current I.T. policy. Any stated record retention times are minimum retention times only. All records within the required retention period should be EASILY recoverable.

ASBESTOS – THE CONTROL OF ASBESTOS REGULATIONS (2012)

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1 INTRODUCTION

1.1 Asbestos is specifically excluded from COSHH regulations. It is considered hazardous enough, in common with Radio Active materials (HSS11) and Lead, to require separate specific legislation covering its control. A great deal of legislation applies, from the licensing of contractors working with asbestos in the early 80's and before, through to the most recent revision which relates primarily to the control of the asbestos risks in existing buildings. This most recent legislation, '**The Control of Asbestos Regulations 2012**' is the principle focus of the following: -

1.2 Breathing air containing asbestos fibres can lead to asbestos related diseases, mainly cancers of the lung and chest lining. There is no cure for asbestos related diseases and there is usually a long delay between first exposure to asbestos and the onset of disease, which can vary from 15 to 60 years

Asbestos is only a risk to health if asbestos fibres are released into the air and inhaled or ingested.

There are three main types of asbestos still found in premises. These are commonly called 'blue asbestos' (crocidolite), 'brown asbestos' (amosite) and 'white asbestos' (chrysotile). All of them are dangerous, but blue and brown are thought to be more hazardous than white.

1.3 It is now illegal to use asbestos in the construction or refurbishment of any premises but many tonnes of it have been used in the past and much of it is still in place. As long as it is in good condition and is not disturbed or damaged, there is no significant risk. But if it is disturbed by removal, cutting, drilling, or damaged by breaking or hammering very small quantities released to the air can become a serious danger to health.

It is therefore necessary to ensure that any asbestos containing materials in a building is identified prior to any work being carried out. It is also necessary to ensure that work is completed without disturbing any asbestos containing materials or that, prior to work commencing, all asbestos likely to be disturbed by our operations is removed by licensed contractors. Tyco Installation and Services are not licensed asbestos contractors. Where there is a suspected risk, work must only be started after studying an Asbestos register or Asbestos management plan. Similarly, where there is a known or suspected risk within Tyco premises, a register must be maintained and work by employees or sub contractors controlled.

1.4 There are two possible causes of exposure to ACM by Tyco employees: -

1.4.1 Service or installation engineers working on customers sites where the work performed by them or others may inadvertently disturb asbestos or suspected asbestos, or where installation work is undertaken in a premises with a known asbestos risk or when work might be completed in a domestic premises where no such register or management plan will exist.

Work in such circumstances is controlled (and working on ACM's currently prohibited) by a generic Risk Assessment – (RA002) available via the Intranet.

Site specific assessments may also be appropriate and will be required, where work is undertaken in a non-hazardous area of a building with a known risk, where work will not disturb ACM's.

Guidance is provided at Section 7 below on the action to be taken in the event discovering asbestos or suspected asbestos containing materials in work areas on a customer's site.

1.4.2 The following therefore relates to the second possible cause of exposure; Tyco owned, occupied or managed non-domestic or domestic premises that may contain asbestos and where the branch has: -

- A legal duty to manage the risk from asbestos; or
- A duty to co-operate with whoever manages that risk.

2 OUTLINE OF REQUIREMENTS

The **Control of Asbestos Regulations 2012** requires employers to prevent exposure of employees to asbestos. If this is not reasonably practicable the law states that their exposure should be controlled to the lowest possible level.

A new duty to manage asbestos has been added to the Control of Asbestos Regulations. It applies to anyone with maintenance and repair responsibilities for non-domestic premises. Domestic premises will have no such duty holder and careful evaluation must take place before any work can commence.

2.1 EMPLOYERS DUTIES

The Control of Asbestos Regulations 2012 now requires Tyco, as employers to manage any asbestos risk within their premises. It is therefore necessary to: -

- Find out if there is asbestos in the premises, identify its location, the amount and its condition;
- Presume that any suspect materials contain asbestos, unless there is strong evidence that they do not.
- Make and keep an up to date record of the location and condition of all ACM (or presumed ACMs) in the premises.
- Assess the risk from the material, to employees, building occupants, cleaners, maintenance contractors, etc. Bearing in mind that the risk of exposure will normally only exist if the ACM is disturbed or is damaged
- Preparing a plan that sets out in detail how the risk from this material will be managed, particularly during maintenance.
- Take the steps needed to put the plan into action
- Review and monitor the plan and the arrangements made to put it in place; and
- Provide information on the location and condition of the material to anyone who is liable to work on or disturb it

The responsibility for statutory compliance rests with EHS Building Owner within the area of their direct control.

Managers must ensure that all persons at risk of coming into contact with asbestos are familiar with the control measures.

2.2 EMPLOYEES DUTIES

All employees have a normal duty under the HSWA to take reasonable care for the health and safety at work of themselves and any other people who might be affected by their acts or omissions.

3 GUIDANCE ON CARRYING OUT ASBESTOS SURVEYS

3.1 It is necessary to identify if asbestos or suspected ACM is present in any Tyco premises. ACMs are most commonly found in buildings of the 60's and 70's but could be present if the building was constructed or refurbished before the year 2000. Apart from the age of the building, other means of identifying if ACMs are present, which include: -

- Looking at building plans and any other relevant construction or previous survey information which may state if asbestos was used in the construction or refurbishment of the premises;
- Carrying out a thorough inspection of the premises, looking at possible asbestos locations (see below), both inside and out to identify materials that are or may be asbestos; and
- Consulting others, such as architects, who may be able to provide more information

If the age of the building and/or information available provides strong evidence that no ACMs are present, then nothing further need be done; other than to record why this evidence indicates there is no asbestos present.

During this investigation, it should be assumed that suspect materials contain asbestos unless there is strong evidence to suggest they do not. Provided suspect materials are undamaged and painted or similarly sealed, and are to remain undisturbed there is no immediate need to confirm the presence of an asbestos content in the material, provided such materials are included in the register and treated in every respect as if they do contain asbestos.

3.2 In certain cases, where it is imperative that the presence asbestos is confirmed, e.g. where it is damaged and likely to release fibres, or where work that is likely to disturb the material cannot be avoided, it may be necessary to have samples of the suspect materials analysed. Samples must only be taken by suitably trained people.

If it is necessary to employ a suitably trained person to undertake sampling or assist in this survey. This person must provide:

- Evidence of their training and experience in this type of work
- Evidence that they will carry out this work in accordance with HSE Guidance HSG 264 – Asbestos: The Survey Guide
- Evidence that they have suitable liability insurance.

The branch / office should retain these records.
The condition of the ACMs must be assessed. Records (i.e. an Asbestos Register) must be kept of the location and condition of asbestos and this information must be provided to any `person likely to come into contact with it.

3.3 The potential risk from the ACMs must be assessed and a plan prepared and implemented to manage these risks.

If the asbestos is;

- In good condition
- Is not likely to be damaged; and
- Is not likely to be worked on or disturbed

It should be left in place and managed.

If it is in poor condition it must be repaired, sealed, enclosed or removed.

Only a contractor licensed by the HSE can carry out any work on asbestos materials, insulation, insulating board and lagging, including sealing and removal. Where such a contractor is used within a branch premise, the contractor's licence details shall be recorded and retained within the branch.

4 ASBESTOS MANAGEMENT PLAN

4.1 To comply with the Asbestos Regulations in non-domestic premises, there is a requirement to ensure that not only has an Asbestos Survey been undertaken, but where Asbestos or ACM's are present and retained within the building it is managed. No such requirements exist for domestic premises so careful consideration must be given prior to commencing works.

The asbestos survey will record where the asbestos is located but there is also a requirement to –

- Prepare a plan that sets out in detail how you are going to manage the risk from this material
- Provide information on the location and condition of the material to anyone who is liable to work on or disturb it
- Conduct an Annual review of the condition of the asbestos.

4.2.1 Form HSF8.1, Asbestos Management Plan, will be utilised by all locations that have asbestos or ACM's. All ACM's will be party to a review at least annually to ensure that the ACM has not been damaged or has not deteriorated since the last inspection. Where ACM's have been damaged or where they have deteriorated then further controls may need to be established.

4.3 The completed HSF8.1 will be appended to the back of the Asbestos Register and should be made available, along with the Asbestos Register, to any contractors working at your location.

5 POSSIBLE ASBESTOS LOCATIONS

5.1 Some ACM's are vulnerable to damage and are more likely to give off fibres than others. In general, materials that contain high percentages of asbestos are those most easily damaged. The list of possible locations/situations below is arranged in descending order of ease of fibre release (i.e. the highest potential fibre release and generally most hazardous, first).

Sprayed coatings, lagging and insulating board are more likely to contain blue or brown asbestos. Asbestos insulation and lagging can contain up to 85% asbestos and are most likely to give off fibres.

Work with some asbestos insulation boards can result in equally high fibre release if power tools are used.

Asbestos cement sheeting normally contains only 10-15% asbestos. The asbestos is tightly bound into the cement and the material will only give off fibres if it is badly damaged or broken.

5.2 Asbestos is most likely to be present in:

- Sprayed asbestos and asbestos loose packing – historically used as fire breaks in ceiling voids.
- Moulded or pre-formed lagging, generally used in thermal insulation of pipes and boilers;
- Sprayed asbestos- generally used as fire protection in ducts, firebreaks, panels, partitions, soffit boards, ceiling panels and around structural steel work;
- Insulating boards used for fire protection, thermal insulation, partitioning and ducts;
- Some ceiling tiles;
- Millboard, paper and paper products used for insulation of electrical equipment. Asbestos paper has also been used as a fire-proof facing on wood fibreboard;
- Asbestos cement products, which can be fully or semi-compressed into flat or corrugated sheets;
- Certain textured coatings;
- Some bitumen roofing material; and
- Some older vinyl or thermoplastic floor tiles.

Although these are the most likely uses and places where asbestos will be found, asbestos was used in many other materials. This list should not therefore be considered exhaustive.

6 GUIDANCE ON WORKING WHERE ASBESTOS MAY BE PRESENT

Work by Tyco employees in areas containing asbestos should be avoided. This is often possible where hazards are known, that preplanning can make the disturbance of asbestos or suspected ACM unnecessary. In some situations however it will be necessary prior to the works commencing to have all asbestos removed from the working area by licensed contractors. In this case, within a Tyco building we would be expected to be in receipt of a clearance certificate from the licensed sub contractor, or in a customer's premises be in receipt of a similar certificate (or copy) via the customer before working or continuing to work. No such requirement exists for domestic premises where work must be carefully planned with consideration given to if and where ACM`s might be present. Although, the need for preplanning and avoidance will apply equally to customers sites as it does to Tyco premises, the difference is that potential asbestos hazards may not have been previously identified on customers sites and engineers need therefore to be aware of this possibility.

Before starting work employees should check the Zero Harm Checklist for any hazards which will include information regarding Asbestos. The employee should also request information about the likely presence of Asbestos with the client/customer. This information should be available directly from the customer in the form of an Asbestos Register/Asbestos Management Plan. If no check has been carried out the engineer should be aware that asbestos is likely in a building if but not restricted to:

- It was built or refurbished prior to the year 2000 and particularly;
- If it also has a steel frame; and/or
- It has boilers with thermal insulation.

If there is any doubt whether a working area contains asbestos, work must not commence, the situation should be reported to the line manager and advice sought from the Health and Safety Co-ordinator.

Material, which may contain asbestos, must not be damaged or broken in an attempt to identify it. Only suitably trained people should take samples for analysis.

Where asbestos is identified, a specific Risk Assessment (see HSS1) is required. This shall include details of the precautions and controls required to ensure that no employees or others are exposed to the hazard. It will also be necessary for the written assessment to identify as far as possible: -

- The location of the asbestos
- The form of the asbestos (lagging, ceiling tiles, partition board etc)
- The condition of the asbestos
- Where possible , the type of asbestos (blue, brown or white)

Under no circumstances will work and/or testing be carried out which involves engineers disturbing or cutting any material that contains asbestos.

7 INSTRUCTION AND TRAINING

All employees, likely to encounter asbestos hazards during the course of their work or whose direct reports are likely to encounter such hazards (i.e. Engineers, Sales Consultants or any employee including sub-contractors likely to attend customer`s premises) must receive training in:

- Asbestos awareness including managing and controlling work in areas containing asbestos materials
- The health hazards associated with working in asbestos contaminated environments.
- The reasons for and the precautions to be taken to protect themselves and others from the dangers of disturbing asbestos
- To report any defect in the system of work being undertaken immediately

8 ACCIDENTAL CONTACT WITH ASBESTOS

8.1 If it is suspected that asbestos containing materials are disturbed during work, then all works in that area should be immediately stopped and the customer / client or Principal Contractor and the employees Line Manager promptly notified that the works are suspended until they can provide written proof that the affected area(s) has been made safe or declared free of airborne Asbestos fibres.

8.2 As an employer, Tyco have a legal duty to minimise the extent of exposure after any accidental exposure to airborne asbestos fibres. Should an employee believe that Asbestos Containing Materials have accidently been disturbed, they must put on their P3 face mask, remove their outer clothing and put on their disposable boiler-suit. Their clothes should be double bagged with the outer bag being wiped over with a damp cloth which should then be bagged in line with recommended emergency actions EM1 flowchart below. The customer/client must be notified along with the relevant Line Manager, Local EHS Co-ordinator and QEHS Specialist. Exposure to airborne Asbestos fibres should be treated as seriously as an accident where physical harm has occurred. It is necessary to remain on the premises until advised otherwise and care should be taken to avoid spreading any dust.

Should an accidental exposure occur in domestic premises, immediately seek further advice from your local QEHS Specialist.

8.3 Once exposure has been confirmed, in writing by a competent and licensed surveyor, the relevant local HR Consultant must be contacted so that the employee can be referred to Occupational Health. Any outer clothes worn by the employee at the time of exposure should then be treated as hazardous waste and disposed of responsibly.

8.4 The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 (RIDDOR) places duties on employers, the self-employed and people in control of work premises to report serious workplace accidents, occupational diseases and specified dangerous occurrences.

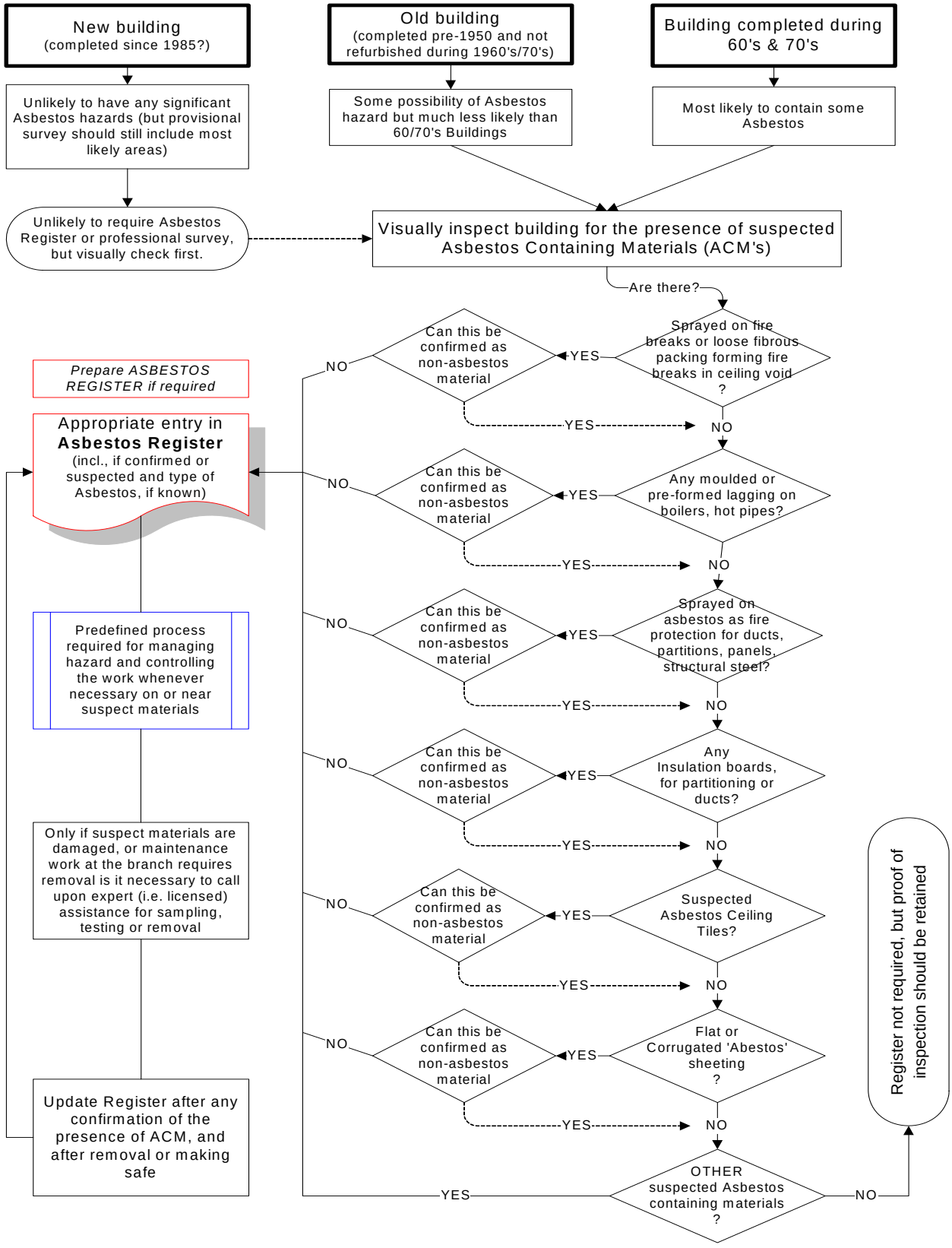
Exposure to asbestos is reportable under RIDDOR when a work activity causes the accidental release or escape of asbestos fibres into the air in a quantity sufficient to cause damage to the health of any person, for further guidance contact the local QEHS Specialist. A full Accident Investigation should be completed and the incident also recorded in line with normal accident reporting procedures. A copy of the completed accident investigation form should be sent to the relevant Insurance Department along with a copy of the report from the competent and licensed surveyor.

9 DEFINITIONS

ACM – Asbestos Containing Materials
AIB – Asbestos Insulating Board

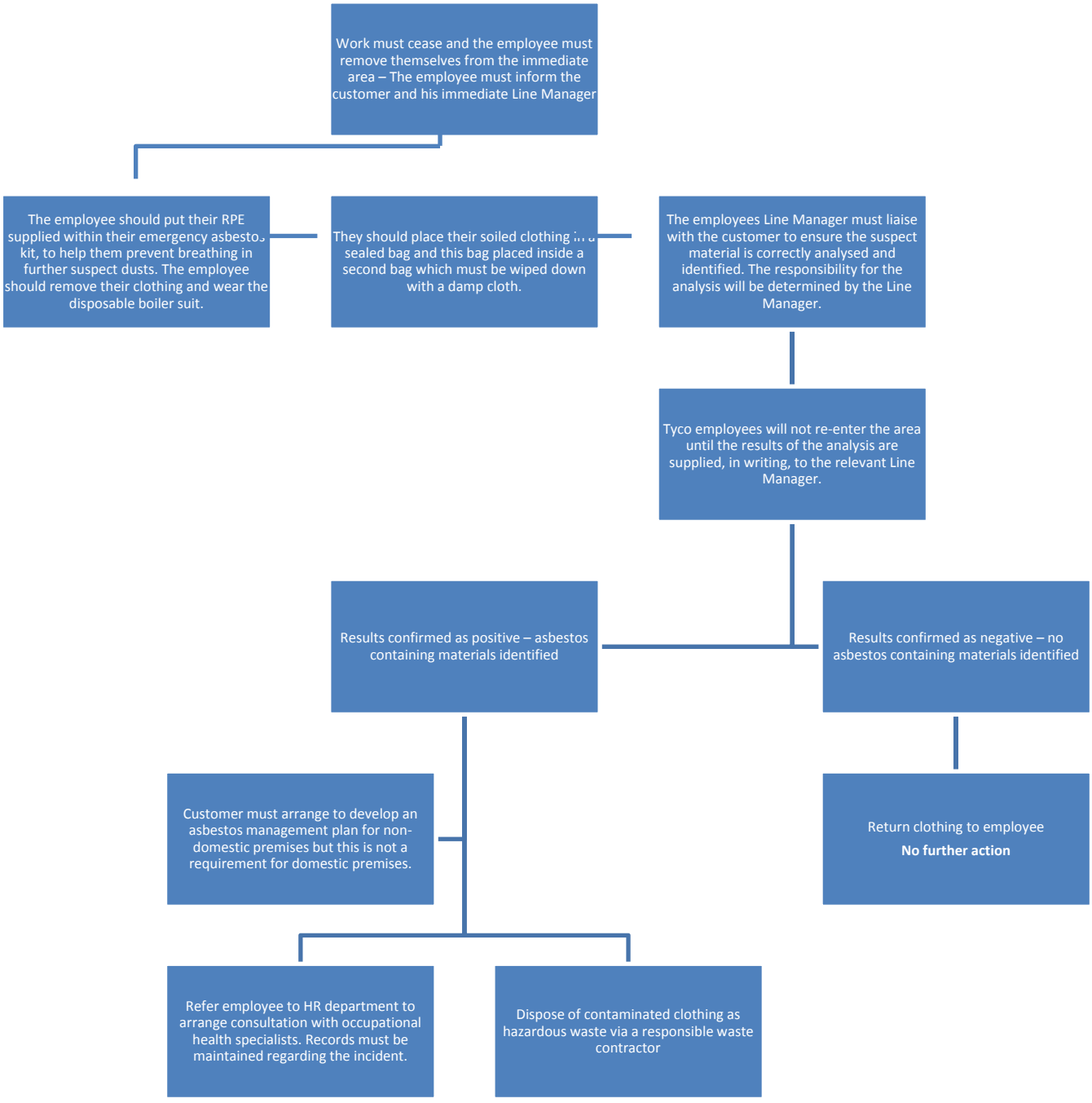
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10 PROCESS FLOWCHART FOR ASBESTOS SURVEY



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11 EMERGENCY PROCURE AFTER ACCIDENTAL DISTURBANCE OF ASBESTOS FIBRES



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1 INTRODUCTION

1.1 The objective of this standard is to ensure that there is a process in place which complies with UK&I statutory requirements and provides reports to Tyco in OSHA format for Global EHS performance monitoring purposes. It provides a platform for all countries to report in the same format and to compare like for like businesses.

The **Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013** (RIDDOR) imposes duties on employers and those responsible for the control of work premises and the activities of people at work to report to the enforcing authority all fatal and major injury accidents, dangerous occurrences and work related diseases. In practice, this is a requirement upon EHS Building Owners /General Managers or Location Managers (in the case of "off-site" work) to report to the local authority and/or the HSE (Health and Safety Executive) all serious work related injury accidents including any resulting in seven or more days incapacity for work.

Similar statutory requirements are enforced in the Republic of Ireland.

The **Occupational Safety and Health (OSH) Act** was passed in the USA in 1970. Since that time, US employers (including Tyco) have been required to prepare and maintain records of work-related injuries and illnesses. The information derived from these logs helps identify corporate trends and evaluate control efforts.

Tyco corporate policy requires that we record 'near misses', 'major near misses' and other non-injury accidents.

1.2 Regulation 3 of RIDDOR classifies reportable events into two categories: those required to be reported immediately and those to be reported within a specified time.

The following should be notified without delay, either by reporting online or, for fatalities and major injuries, it can be by telephone on 0845 300 9923.

- Fatalities as a result of an accident arising out of or in connection with work
- Specified injuries of any person at work as a result of an accident arising out of or in connection with work
- Dangerous occurrences
- Injuries to any person not at work caused by an accident in connection with work and that person is taken to a hospital for treatment
- Specified injuries to any person not at work caused by an accident in connection with work at a hospital

Cases of **over seven-day injuries** must be notified within 15 days of the incident occurring using the appropriate online form. Where the RIDDOR Database has been notified, no follow-up action in respect of reporting is then required.

The following should be kept in mind:

- Where the nature and severity of an injury is not immediately apparent, the report required shall be submitted as soon as the nature of the condition is confirmed.
- Deaths to be reported include those where an employee dies within one year as a result of an accident at work, whether or not this was reported at the time of the original accident.
- Although the police would notify the HSE in cases of accidental fatalities at work, this does not relieve the responsible person of the duty to report the fatality to the HSE.

For the full definition of each category of reportable events, reference should be made to the HSE RIDDOR Reporting web site www.hse.gov.uk/riddor/

1.3 In addition to our legal obligations, we are required to ensure that all injuries regardless of how minor they may initially appear are recorded in an accident book in a form approved by the **Social Security (Claims and Payments) Regulations 1979.** Ireland has a similar requirement.

1.4 In order that we can take action to reduce or eliminate the possibility of recurrence, in addition to reporting injuries it is necessary that we investigate, to an appropriate degree, any injury accidents, incidents and appropriate 'near misses' and 'major near misses' that occur. We need to make sure that all 'reasonably practicable' precautions and management controls are given due consideration and where justified followed through to a conclusion. form HSF9.1 is used for recording the investigation of injury accidents and HSF9.3 similarly used for recording 'near misses' and 'major near misses', damage or dangerous occurrences or form in employee's handbooks.

1.5 Legislation requires 'responsible people' to maintain health and safety records for a minimum of three years and in certain instances much longer. These records may be required during possible future legal (civil or criminal) proceedings or to clarify insurance claims. It is therefore important that they are not only completed properly but also that they are retained and are easily retrievable. The statistical information that we are required to accumulate can eventually be used by the health and safety function to analyse overall company accident performance and indicate trends. In the short term these statistics assist in providing the 'accident frequency rates' and other information that we are increasingly asked to provide by customers and managing contractors when they vet our suitability as business partners under **Construction (Design & Management) Regulations** for future contracts.

1.6 This Health and Safety Standard outlines the main statutory requirements for reporting accidents and details how we as a Company, will investigate, report (internally and externally) and maintain records of work related injuries, accidents and incidents.

2 DEFINITIONS

2.1 The following definitions apply to this Health and Safety Standard:-

Accident: An unplanned event which may or may not involve injury or damage. Legislation is generally concerned only with **accidents** which cause or have the potential to cause **injury (or fatality).**

Injury Accident: An unplanned event arising from a work activity which results in an injury to a person or persons. It will generally be **reportable** and/or **recordable**

Reportable: An injury accident or dangerous occurrence which according to RIDDOR (the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995) must be

reported to HSE (the Health & Safety Executive) or the local authority.

Recordable: An injury accident which should be recorded in a local accident book and reported internally i.e. *all* injury accidents. The accident may or may not be serious enough to also be 'reportable'.

Near Miss: An incident which, under slightly different circumstances, could have resulted in a serious injury accident or major property damage. Incidents such as this are referred to as a 'near hits' in US based Tyco documents but within UK are more easily understood when referred to as 'near misses'.

Major Near Miss: Any incident which nearly results in a Significant EHS Incident meeting the definition of "Major". Examples include: electric shock; uncontrolled discharge of pressurised gases; collapse of a structure; unintentional release of a suspended load, etc.

OSHA Occupational Health & Safety Administration (in the United States)

RIDDOR and the Republic of Ireland equivalent are the government regulations covering accident reporting in UK and Eire respectively.

2.2 **Reportable Accidents and Incidents include:-**

Fatal accident: includes any accident which results in a death and in the case of an employee, if he/she dies within one year as the result of an accident which is otherwise reportable, whether or not the original accident was actually reported.

Specified injury accidents: are specified by UK & Eire legal requirements (they are all reportable) listed below, but not limited to:

- All fractures except fingers, thumbs and toes
- All amputations
- Dislocations of shoulder, hip, knee or spine
- Loss of sight (temporary or permanent) or penetrating eye injury
- Electric shock or electrical burn leading to unconsciousness or requiring resuscitation or admittance to hospital for more than 24 hours
- Asphyxia or loss of consciousness resulting from exposure to harmful substances
- Acute illness requiring medical attention following ingestion, inhalation or absorption through the skin of any toxin, biological agent or infected material.
- Any other injury which results in admittance to hospital for more than 24 hours, hypothermia, unconsciousness or the need for resuscitation

Major and Serious EHS Incidents: are defined by OSHA and Tyco as Any workplace or work related incident that meets any of the following criteria:

Major

- Near fatalities involving amputation of a limb
- Internal injuries
- Head injuries resulting in prolonged coma (i.e., unconsciousness for more than 24 hours), or loss of an eye
- Any one, single workplace event resulting in more than one employee being injured or becoming ill
- Explosions that are not contained within a process
- Any Consent Agreement/Order/Lawsuit or enforcement action filed or threatened by a government regulatory agency or private party which seeks or is permitted to impose more than $100,000 USD in penalties, fines or damages (excludes cost recovery/cost contribution actions related to clean-ups). This includes any

enforcement action that is filed or threatened by a government agency which alleges criminal violations or specifically threatens criminal enforcement for alleged violations on an EHS Incident.

- Any spill or release in excess of 1000 pounds (454.5 kg)

Serious

- Amputation of body parts other than limbs (e.g. hand or finger)
- Hospitalization for treatment (admission)
- Short term unconsciousness (i.e. less than 24 hours)
- Absence from work for more than 30 calendar days due to occupational injury or illness of a part time or full time Tyco employee or an external contractor working under the direction and control of a Tyco representative
- Fractures of bones
- Any Consent Agreement/Order/Lawsuit or enforcement action filed by a government regulatory agency or private party seeking more than $50,000 USD in penalties, fines or damages (excludes cost recovery/cost contribution actions related to clean-ups)
- Any spill or release required to be reported to a government agency or authority
- *Spills or Releases*: Any abnormal or unplanned discharge to the environment of oil, chemical or mixture resulting in an actual or potential adverse impact including but not limited to contamination of the environment or negative impact over the fauna or flora, or human health. Materials discharged to air, water bodies or sewer systems in compliance with permitted discharge or emission limits are not considered Spills or Releases.

Accidents resulting in over 7 day's incapacity for work:
This is self-explanatory and all over 7 days' work related injury accidents are 'reportable' however caused.

Note: That the day of the accident itself is excluded but days which may not be normal working days (such as Saturdays, Sundays and Bank Holidays) are included; include only whole days, no part days.

Non-fatal accidents to non-workers (e.g. members of the public)
Accidents to members of the public or others who are not at work must be reported if they result in an injury and the person is taken directly from the scene of the accident to hospital for treatment to that injury. Examinations and diagnostic tests do not constitute 'treatment' in such circumstances.

2.3 **Recordable Accidents include:**

First Aid injuries: are those injuries which require first aid treatment but no absence from work (except during the day of the accident). Such accidents are 'recordable' but would not normally be 'reportable' unless they are associated with a 'dangerous occurrence' (as defined below).

Low Severity – For Reporting Purposes Only: this category of incident is used on MyTycoEHS for all incidents where there is only a small injury but no first aid has been provided. An example of this could be a small cut to the finger where no plaster is required. This category should not be used when lost days have been observed or where medical treatment or first aid has been provided.

Lost Time Accident (LTA): in the context of this standard, is an injury where the accident has resulted in lost time of any number of days and the accident is not 'reportable' for any other reason.

Medical Treatment Injury: is any injury where the injured person requires more than one visit to a doctor or hospital for treatment (excluding tests, x-rays, etc.). It may or may not be 'reportable' but will always be 'recordable'.

Near Misses and Major Near Misses: which are reported (internally on a form HSF9.3) only, and investigated as appropriate, and in a similar manner to other accidents.

Tyco Recordable: All incidents resulting in one or more days absent from work are defined in OSHA as recordable.

2.4 **Responsible Person:** is the person who must make the notifications and reports stipulated by RIDDOR. The regulations provide a long list of different types of premises and circumstances which will determine the responsible person but in the context of the Company, the responsible person is he or she in control of, or responsible for, the premises at that time, i.e. the General Manager / Senior location Manager on Company locations. The employer, that is, the senior operational manager, is responsible at all other locations i.e. working sites, or when young persons are involved.

2.5 **Dangerous Occurrence:** the regulations require dangerous occurrences to be reported and a considerable list of such incidents are included, but not limited to, most of which are unlikely to be encountered during the Company's normal operations. A list of general headings is provided and greater detail is available from the Quality, Environmental & Health & Safety (QEHS) Department if it is suspected that there may be a requirement.

- Lifting machinery, cranes, etc. failing
- Pressure systems
- Freight containers
- Overhead electric lines
- Electrical short circuit (attended by fire or explosion)
- Explosives
- Biological agents
- Malfunction of radiation generators
- Breathing apparatus failure
- Diving operations
- Collapse of scaffolding
- Train accidents
- Wells
- Pipelines and pipeline works
- Fairground equipment
- Carriage of dangerous substances
- Building collapse
- Fire or explosion
- Escape of flammable dangerous substances

2.6 **Diseases,** Industrial and Occupational diseases are reportable under RIDDOR (but not required in Eire) and those concerned are listed in the regulations. It is unlikely that Company employees would be exposed to such diseases during normal working but the QEHS Department should be requested to provide further information if any cause for concern exists.

2.7 **Acts of Violence** committed against a Tyco employee resulting in injuries including, but not limited to those caused by knife or gunshot wounds must be reported based on the definitions outlined above (fatality, major, or serious).

2.8 **Significant Incidents:** although covered within the above paragraphs there is an additional requirement to review 'Significant Incidents' with senior management. Fatal Accidents, Major Injury Accidents, major near misses and minor accidents resulting in excess of 30 days absence are all categorised as 'Significant'.

Once an incident has been identified as 'significant' contact should be made with the QEHS Department to ensure the correct presentation template and excel spreadsheet is completed and returned. A conference call will then be arranged to discuss the incident in more detail.

See Paragraph 6 for more information regarding reporting requirements.

3 OUTLINE OF REQUIREMENTS

3.1 The general principle of the process described in this document is that internal notification and recording, investigation, and external reporting of accidents and incidents are in line with all current statutory and corporate requirements. Further, that information and investigation, as is necessary to compile company records, is available to those considering risk assessments or improvements to management controls. These records also, enable the development of a statistical accident/injury database. To enable the reporting system to function properly, the General Manager or Senior Location Manager and other responsible managers must ensure that all appropriate staff are aware of the contents of this standard and that it is implemented and correctly operated within his/her area of responsibility.

3.2 Each Branch/location shall maintain an 'ACCIDENT BOOK'. This record must contain a minimum amount of information about every injury accident incurred by employees who are based at or attached to the Branch/location or that occurs at the Branch/location premises (to anyone). The book shall be kept in a readily accessible position and a notice to this effect shall be displayed on the Health and Safety notice board.

3.3 Responsibility for ensuring that the appropriate entry is made into the book as soon as possible following an injury rests with the person injured. Although clearly he or she may not be in a position to actually make an entry and they may in such circumstances request a line manager (or first-aider, Area QEHS Specialist or EHS co-ordinator) to complete it on their behalf.

All timely entries in the book should be encouraged irrespective of the apparent severity of the injury and entries should provide 'quality' information which will remain clear and concise long after the accident is forgotten. It must be borne in mind that this document may be required for insurance or statutory purposes some considerable time after the entry has elapsed.

All Reportable accidents/ incidents must be reported within 24 hours to the General Manager/ Business Unit Leader and Regional Managing Director. The Area QEHS Specialist must also be notified within 24 hours who will escalate to the National QEHS Manager.

3.4 Very late entries into the accident book and MyTycoEHS should be allowed only where it is reasonable to assume that a genuine work related injury has occurred. Whilst requests for late entry may not be refused, an explanation note as to the circumstances or reasons for late entry may be added by the responsible manager.

3.5 The following (minimum) information is required:

- Full name, address and occupation of the injured person
- Date and time of the accident
- Place where the accident happened
- Cause and nature of the injury (Factual Only)

- Name, address and occupation of the person making the entry, if other than the injured person

3.6 All accident books must be retained for an absolute minimum period of three years from the date of the last entry. Entries on MyTycoEHS will remain available permanently, although after a period of time they will become archived.

3.7 All entries in the accident book should be accompanied by completion of an Internal Accident Report form (HSF9.1).

3.8 All completed Internal Accident Report forms (HSF9.1) are to be emailed to the National QEHS Manager for further record keeping and sent to the Insurance Department or Finance Department, Dublin (ROI). A copy will also be retained at the Branch/location.

3.9 An investigation should be carried out to establish if unsafe acts or conditions contributed to the accident and/or to determine any underlying contributory causes. Only if we establish the correct causes can we act to prevent repetitions. In many cases we will be able to track the root cause back to a lack of management control that we can then remedy (See Attachment 5 – Fishbone Accident Investigation Tool for guidance).

3.10 The first level of investigation should be undertaken by the injured person's immediate line manager and the completion of the company form is his/her responsibility. The General Manager, Senior Location Manager, the QEHS Specialist, the EHS Co-ordinator and the QEHS Department should be informed as soon as practical of accidents particularly if they are likely to become 'reportable' to HSE or local authority and 'significant' under the Tyco requirements.

3.11 Whilst an investigation should always be carried out, the depth of investigation and the importance of making recommendations should be appropriate to the severity or potential severity of the incident. In general terms almost all accidents should be considered as preventable but even with the best of controls in place a momentary lapse or careless act can be the cause of a very minor accident which does not justify a high level time consuming investigation. Following a lost time injury the QEHS Specialist must be involved in relevant investigation, this must be in conjunction with the relevant line manager.

3.12 The area QEHS Specialist will report all accidents on his/ her weekly report.

3.13 The completed Near Miss, Damage or Dangerous Occurrence Records (HSF9.3) will be retained at the Branch/Location and uploaded onto MyTycoEHS by nominated branch person.

3.14 The General Manager/Senior Location Manager will review accident reports and recommendations at Safety committee meetings.

3.15 Injury accidents and dangerous occurrences (as defined in Section 2 above) must be reported to the Enforcing Authority, by the Branch/location (or responsible manager), online, by telephone or by using government **Form F2508** (or IR1/IR3 for ROI).

3.16 Whichever method is used, the report must be made to the Enforcing Authority and a copy should always be retained in paper format and a further copy uploaded to MyTycoEHS.

4 ACTION POINTS

4.1 Identify a suitable person/position to report required incidents and accidents on MyTycoEHS and keep the accident book where it will normally be accessible. The accident book should be preferably held in the care of a person normally available in the branch/location office.

There should be only one book for the use of all persons attached to each location. Other books, if any, should be withdrawn (and retained). The book shall be in an approved format. Unsuitable books should be replaced (but retained).

4.2 A notice shall be prepared and posted advising all persons of the existence of the accident book, its location, and the circumstances and responsibilities for its use.

4.3 An internal accident report form (HSF9.1) should be completed for all and every injury accident that has been entered into the accident book. A copy of this report should be retained.

4.4 Following investigation by the first line manager, where appropriate, recommended actions should be escalated to the next level of management, the General Manager/Senior Location Manager and EHS Committee Chairperson. Following a lost time injury the QEHS Specialist should assist in the investigation; this must be in conjunction with the line manager.

4.5 The General Manager/Senior Location Manager should be advised if an accident is, or is likely to become, a 'reportable' injury and **he/she should also be advised if sickness leave extends for a period of eight or more days, and also if the period of sickness extends for a period of 30 days or more for significant incident reporting purposes.**

4.6 General Manager/Senior Location Manager should advise local authority or HSE of reportable injury accidents and dangerous occurrences, using **Form F2508** (or IR1/IR3 in Ireland) as at 3.14 above.

4.7 Copies of all accident reports and documentation should be retained at the Branch for future reference. Copies of all HSF9.1 reports should be passed to National QEHS Manager, whereby a member of QEHS team will upload onto MyTycoEHS where they can be reviewed by senior managers and the QEHS Department. All HSF9.3 reports are to be loaded onto MyTycoEHS by nominated branch person.

4.8 Injury accidents should be used as indicators for improving management control and reviewing Risk Assessment as appropriate.

4.9 All injury accidents will be discussed on weekly accident telephone calls with, and not restricted to, Managing Director, FPS EMEA, Director EHS CE & UK & I, National QEHS Manager, the Senior Location Manager, Line Manager and Area QEHS Specialist.

4.10 All injury accidents must be reported to the Insurance Department by the Area QEHS Specialist. Information to be sent must include completed HSF9.1 form, relevant training records of injured party, any relevant equipment document checklists and any relevant Risk Assessments.

5 PERIODIC ACCIDENT/ILLNESS REPORTING TO QEHS DEPARTMENT

5.1 In addition to the statutory accident reporting requirement, the Company will maintain statistics, including Incident and Frequency Rates. The purpose of this is: -

- // To assist in monitoring the implementation of the health and safety policy
- // To assist decision making, planning and future resource allocation.
- // To provide feedback information on performance and trends that can be used in the development of future safety strategies and safe systems of work.
- // To provide information to external interested parties.

5.2 The General Manager/Senior Location Manager will ensure that a monthly report of all accidents and work related illness is detailed on the Accident/Illness Analysis Form (HSF9.2)

and sent to area QEHS Specialist for clarification before they forward to National QEHS Manager.

5.3 The form (HSF9.2) is set up to carry out all calculations required to provide HSE and OSHA frequency rates.

5.4 A copy of the report should be retained in the branch.

5.5 The report should include temporary employees injured whilst under the control of a Tyco Manager.

5.6 Some explanation of the other information required to be input into the Accident/Illness Analysis Form (HSF9.2):

Restricted work activity occurs when, as the result of a work-related injury or illness, an employer or health care professional keeps, or recommends keeping, an employee from doing the routine functions of his or her job or from working the full workday that the employee would have been scheduled to work before the injury or illness occurred. If injured person on restricted duties for more than 7 days, then the HSE must be notified.

Count the number of calendar days the employee was on restricted work activity or was away from work as a result of the injury or illness. Do not count the day on which the injury or illness occurred in this number. Begin counting days from the day **after** the incident occurs. If a single injury or illness involved both days away from work and days of restricted work activity, enter the total number of days for each.

A **musculoskeletal disorder (MSD)** is a disorder of the muscles, nerves, tendons, ligaments, joints, cartilage, or spinal discs. MSD's DO NOT include disorders caused by a slip, trip, motor vehicle accident, fall, or other similar accidents. **Examples of MSD's include:** Carpal tunnel syndrome, epicondylitis, rotator cuff syndrome, tendinitis, De Quervains' disease, Raynaud's phenomenon, trigger finger, carpet layers knee, tarsal tunnel syndrome, herniated spinal disc, sciatica, and low back pain.

Skin diseases or disorders are illnesses involving the worker's skin that are caused by work exposure to chemicals, plants, or other substances. **Examples:** Contact dermatitis, eczema, or rash caused by primary irritants and sensitizers or poisonous plants; oil acne; friction blisters, chrome ulcers; inflammation of the skin.

Respiratory conditions are illnesses associated with breathing hazardous biological agents, chemicals, dust, gases, vapours, or fumes at work. **Examples**: Silicosis, asbestosis, pneumonitis, pharyngitis, rhinitis or acute congestion; farmer's lung, beryllium disease, tuberculosis, occupational asthma, reactive airways dysfunction syndrome (RADS), chronic obstructive pulmonary disease (COPD), hypersensitivity pneumonitis, toxic inhalation injury, such as metal fume fever, chronic obstructive bronchitis, and other pneumoconiosis.

Poisoning includes disorders evidenced by abnormal concentrations of toxic substances in blood, other tissues, other bodily fluids, or the breath that are caused by the ingestion or absorption of toxic substances into the body. **Examples**: Poisoning by lead, mercury, cadmium, arsenic, or other metals; poisoning by carbon monoxide, hydrogen sulphide, or other gases; poisoning by benzene, benzyl, carbon tetrachloride, or other organic solvents; poisoning by insecticide sprays, such as parathion or lead arsenate; poisoning by other chemicals, such as formaldehyde.

Noise-induced hearing loss must be recorded when (1) the employee's exposure is at or exceeds 80dba on an 8 hour time weighted average. (2) when the employee experiences a "standard threshold shift" or STS (3) the STS is work related and the employee's aggregate

hearing loss exceeds 25db from audiometric zero.

All other occupational illnesses examples: Heatstroke, sunstroke, heat exhaustion, heat stress, and other effects of environmental heat; freezing, frostbite, and other effects of exposure to low temperatures; decompression sickness; effects of ionizing radiation (isotopes, x-rays, radium); effects of non-ionizing radiation (welding flash, ultra-violet rays, lasers); anthrax; blood borne pathogenic diseases, such as AIDS, HIV, hepatitis B or hepatitis C; brucellosis; malignant or benign tumours; histoplasmosis; coccidioidomycosis.

The **hours worked** by all employees at the "site" should be included. Technicians, supervisors, managers, maintenance employees, engineers, administrative and sales employees should all be included.

Hours worked by leased, contract or temporary employees including sub contractors should be included if Tyco is controlling the individual's work content.

6 SIGNIFICANT INCIDENT REPORTING

The **General Manager / Senior location manager** is responsible for nominating a senior administrator or PA to report any significant incidents.

All **employees and managers** are responsible for reporting accidents / incidents that are significant as soon as they are made aware of them.

7 MOTOR VEHICLE ACCIDENTS

All Motor Vehicle accidents resulting in injury must have a full accident investigation carried out by the drivers' immediate Line Manager using HSF9.1 form. **The Fishbone Motor Vehicle Accident Investigation Tool must be used if the accident resulted in personal injury to the Tyco driver or passengers, 3rd party driver or passengers or any members of the public (See attachment.)**

However this may also be used if the accident is deemed serious enough or the accident is not the first the Tyco driver has been involved in past 12 months.

All other Motor Vehicle Accidents must have Motor Vehicle Accident Form (HSF9.4) completed by drivers Line Manager and returned to Fleet Department.

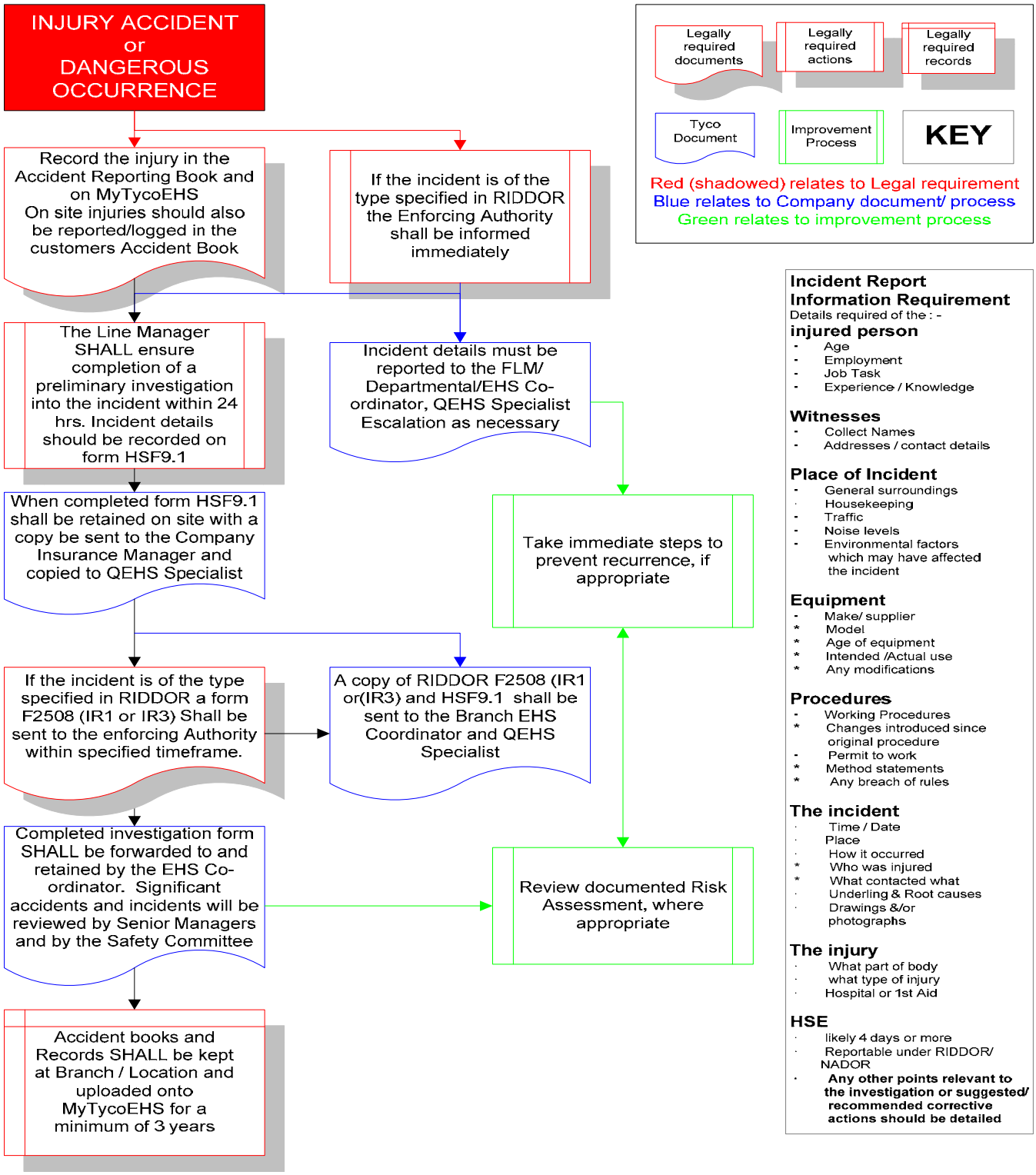
Upon return, the Fleet Department will forward complete document to National QEHS Manager for review. The QEHS team will enter all Motor Vehicle Accidents onto MyTycoEHS.

8 ATTACHMENTS

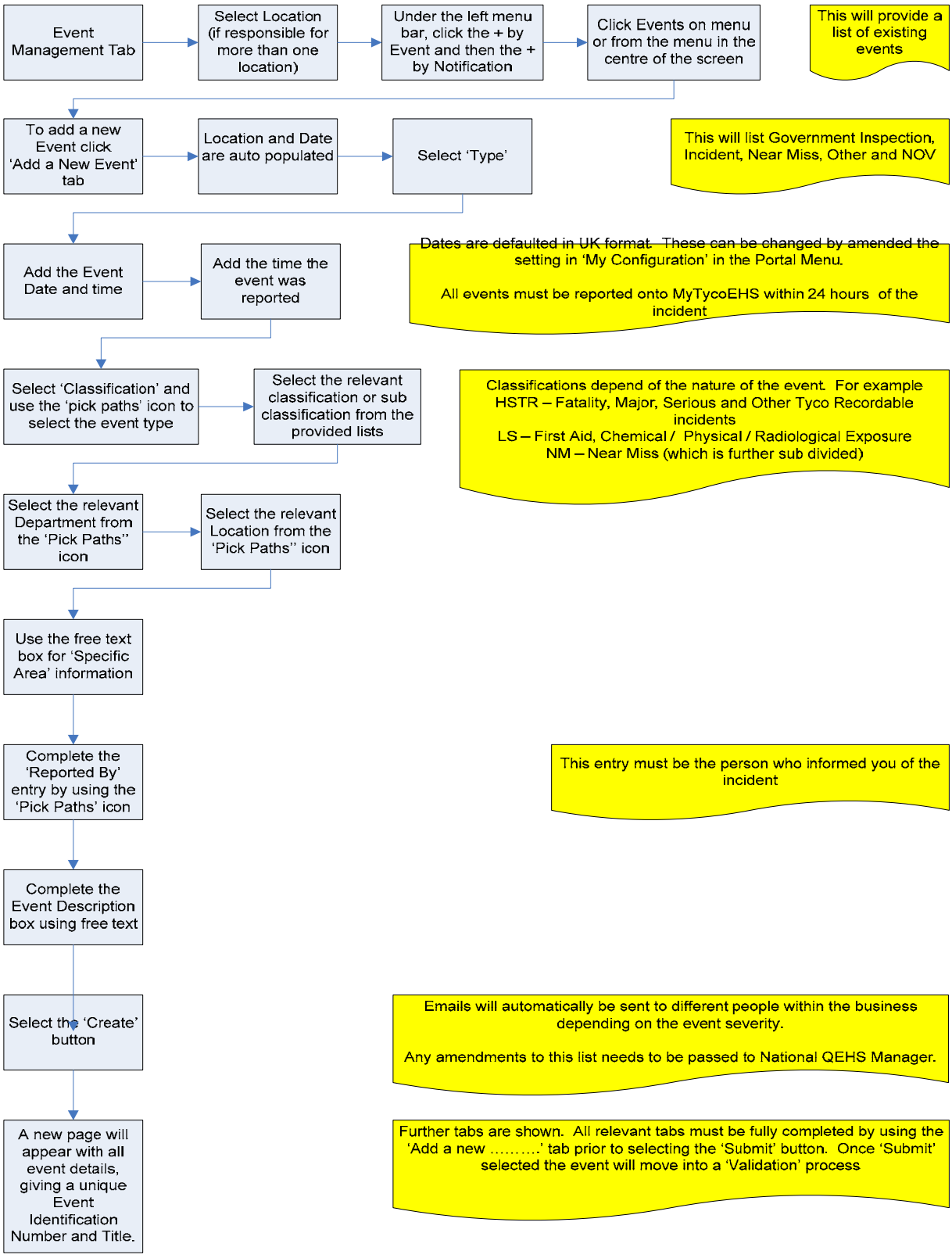
Attachment 1 - Accident Reporting
Attachment 2 - Logging an Event on MyTycoEHS
Attachment 3 - Significant Incident Reporting
Attachment 4 - Accident /Incident Reporting Decision Tree
Attachment 5 - Fishbone Accident Investigation Tool
Attachment 6 - Fishbone Motor Vehicle Accident Investigation Tool

NOTE: Records may be in the form of any type of media such as hard copy or electronic media, where electronic media is used, ensure there is adequate provision for backup and recovery in accordance with current I.T policy. Any stated record retention times are minimum retention times only. All records within the required retention period should be EASILY recoverable.

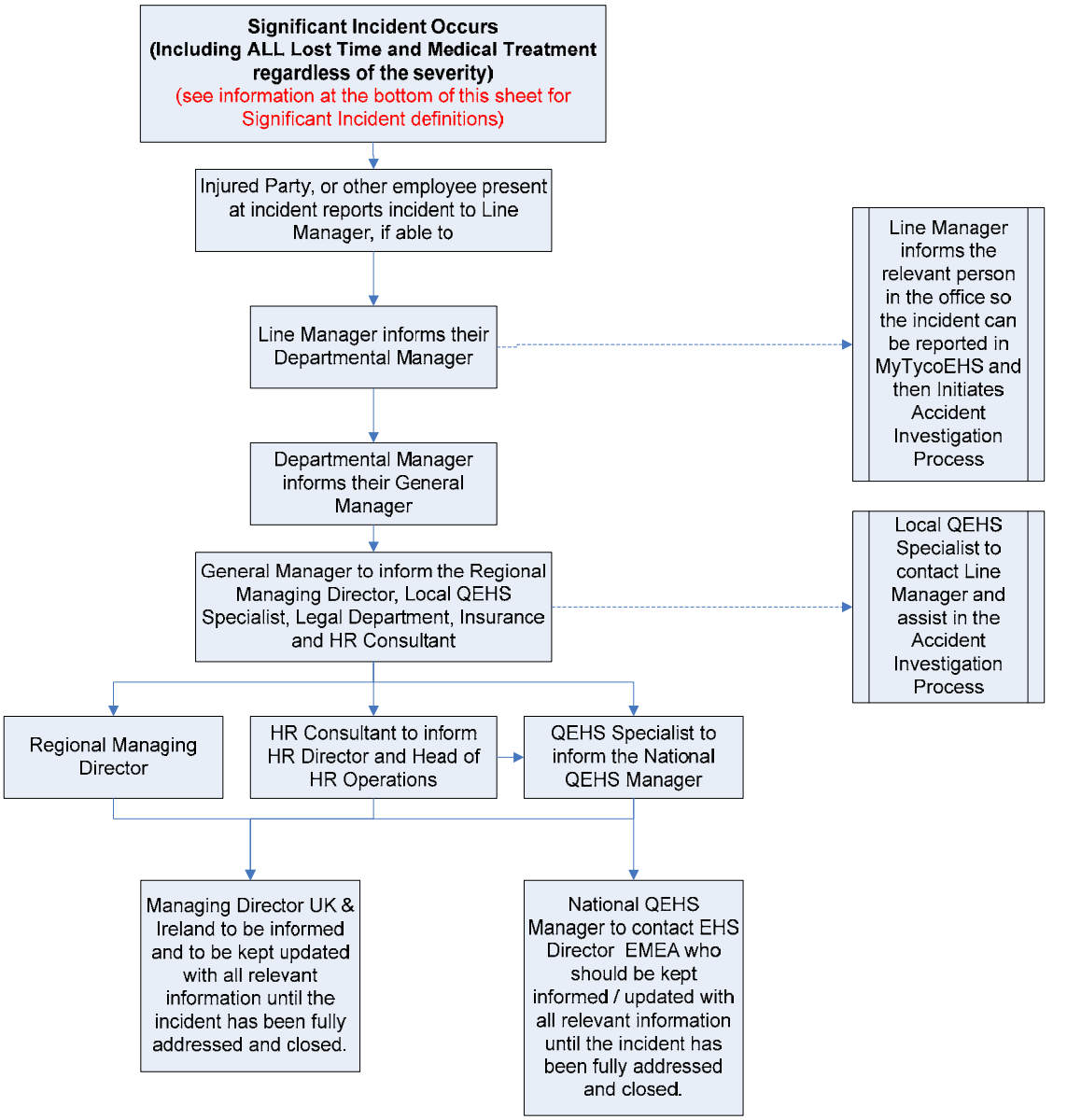
ATTACHMENT 1 – Accident Reporting

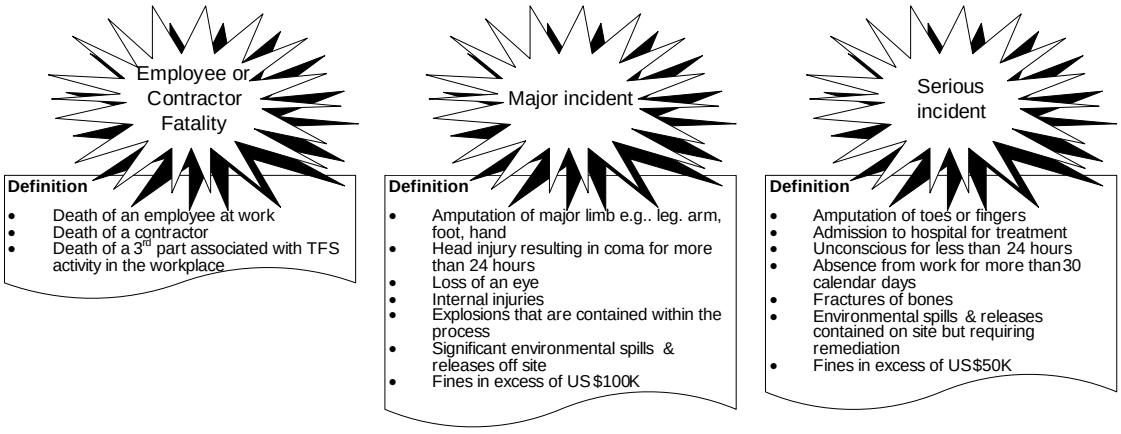


ATTACHMENT 2 – Logging an Event on MyTycoEHS

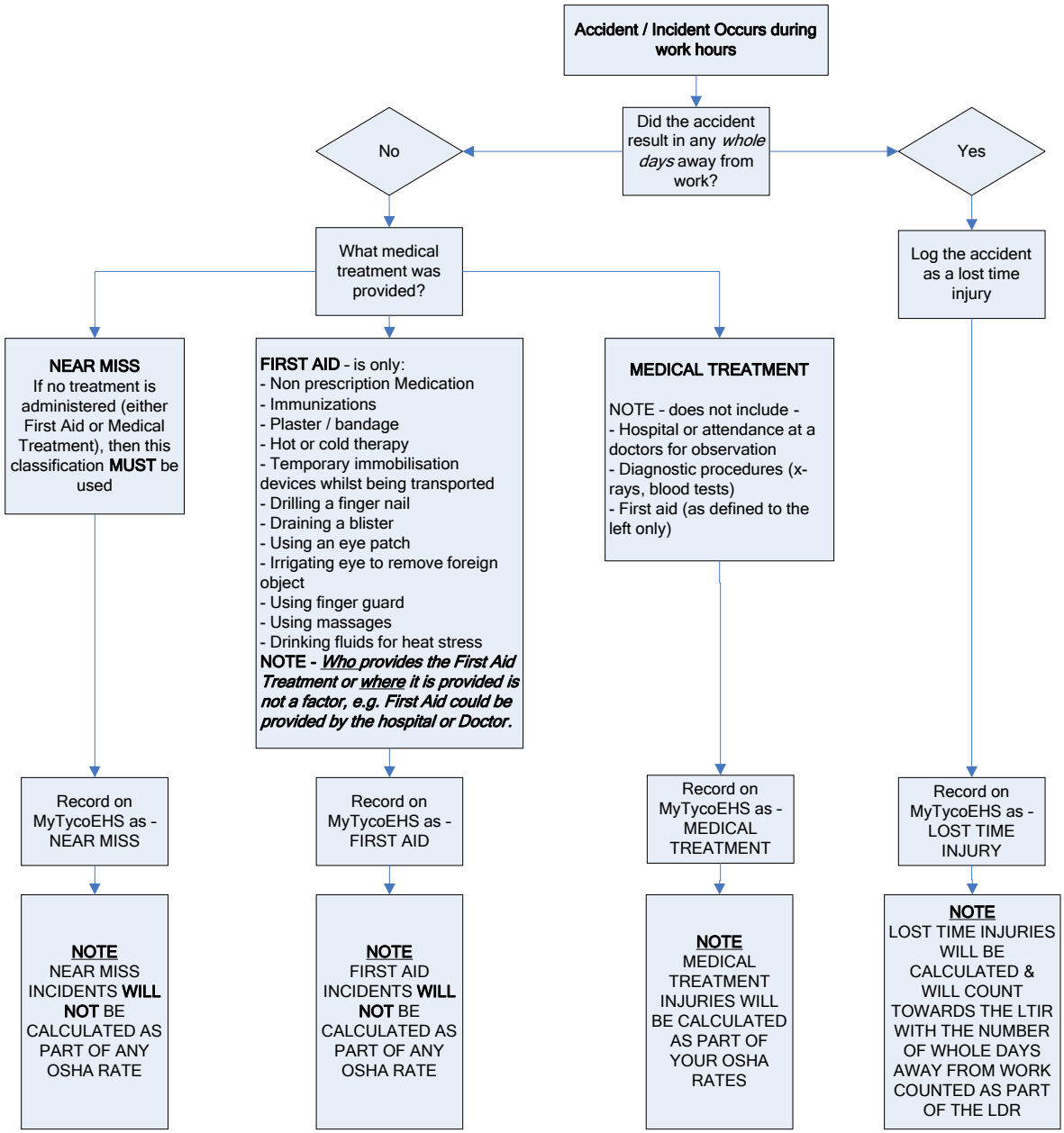


ATTACHMENT 3 – Significant Incident Reporting





ATTACHMENT 4 – Accident/Incident Reporting Decision Tree



Notes:

1. The flow diagrams above should be followed where the injured party is a direct employee of Tyco and also when Tyco is providing direct supervision to a sub-contractor.
2. An incident should be classed as “closed” when the employee returns to full duty.
3. A “Major Near Miss” should be reported via the Near Miss route, however due to its nature will result in Significant Incident conference call. Examples include: electric shock; uncontrolled discharge of pressurized gases or unintentional release of suspended load, etc.

ATTACHMENT 5 – Fishbone Accident Investigation Tool

Incident Investigation Process

PURPOSE:

To Identify root causes and corrective actions which will help prevent a reoccurrence of the incident: not assign blame. Additional benefits include identifying incident trends, gaps in EHS programs and other potential hazards which could have caused an incident.

WHAT INCIDENTS SHOULD BE INVESTIGATED:

All incidents from near miss to major incidents should be investigated. Incidents involving any level of personal injury to a Tyco employee, visitor or on-site contractor should be investigated in a comprehensive manner. .

WHO SHOULD DO INVESTIGATION:

The process should be led by the reporting employee's direct Line Manager, with support from the QEHS Specialist or Branch EHS Coordinator if required. Senior Managers are responsible for reviewing the quality and accuracy of the investigation. Line Managers are responsible for implementing corrective actions.

WHEN IT SHOULD BE COMPLETED:

The information gathering step (see below) should be completed as soon as possible (within 1 business day). The analysis and conclusion phases can take longer depending on the complexity of the incident. Corrective/ Preventative measures should be implemented in a timely manner.

HOW IS THE INVESTIGATION DONE:

There are many methods for completing incident investigations. This incident investigation procedure uses the **Fishbone Method** for identifying causal factors (things that could have contributed to causing the incident). The causal factors are broken up into four categories, people, processes, environment and equipment to allow for a more thorough analysis of the incident. Once all of the factors have been identified, corrective actions should be developed and then prioritized based on whether they played a big part in causing the incident (root cause) or just one of several contributing causes (immediate or underlying causes). **There is always more than one causal factor involved in an incident**.

4 Steps of Incident Investigation

1. Initial Response – make sure anybody with injuries has been provided with medical care; provide first aid and contact local emergency medical response team (if required). Review the scene of the incident to identify and control any hazards which pose immediate danger (damaged utilities, machinery, building structure, exposed electrical components, etc.) If possible cordon off area until information gathering phase gets started.

2. Information Gathering - determine what occurred, who was involved, what processes/equipment was being used, conditions in the workplace or customer site, interview employee immediately if possible (and any others in immediate area), take digital pictures to allow for further review. Any equipment that was damaged or failed during the incident should be secured for further analysis. All employee training records and summary of hours worked during the previous 7 days should also be collected (see Steps 1- 3 in HSF9.1).

3. Analysis **–** Use the Fishbone diagram on the next page to plot out all of the causal factors (things that could have contributed to causing the incident, (see Step 4 in HSF9.1). Do not be concerned about whether or not we can correct a factor (such as weather) as our goal at this point is simply to outline all of the causal factors. Consider each category carefully and go back to collect more information if necessary.

4. Develop Corrective Actions **–** once you are satisfied that all causal factors have been identified, list them in order of importance; how much of a role did it play in the incident? The top 2 or 3 causal factors should have multiple corrective actions with very aggressive target dates. The remainder of the causal factors should be addressed with corrective actions but can be prioritized accordingly (see Step 6 in HSF9.1). **REMEMBER: Follow Up On All Corrective/ Preventative Actions**

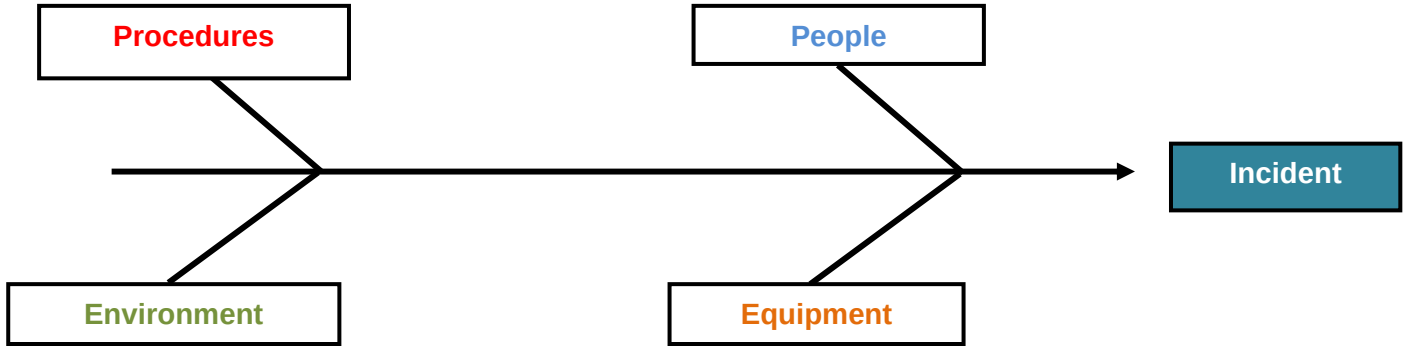
FISHBONE ACCIDENT INVESTIGATION TOOL

Procedures:

- Was there a safe work procedure for the task being performed?
- Was the safe work procedure practical to follow?
- Was a risk assessment completed prior to starting work?
- Had a risk assessment ever been completed? Had the employee been made aware of the hazards present?
- Was the task being performed highly repetitive?
- Was the task being performed in a awkward posture
- Had the equipment been inspected as required?
- Was this a new process or procedure?

People:

- Did the employee follow established safe work methods and/or use the appropriate equipment (tools, ladders, material, PPE, etc).
- Was the employee overly tired; had the employee been working extended hours or consecutive days?
- Did the employee have experience performing the task involved?
- Had the employee received all of the required EHS training?
- Was there additional training the employee should have been given to carry out the tasks they were performing?
- Had the employee been informed of the hazards of the job and the required safe work procedures?
- *Interview*: was the employee aware of the safe work practices to follow or the correct tools/personal protective equipment to use?



Environment:

- Was there adequate lighting?
- Was the walking surface slippery or uneven?
- Was the walking surface damaged or worn from use
- Was there a lot of noise in the area?
- Was there limited space to work in?
- Was the work area cluttered due to poor housekeeping or storage arrangement?
- Was it very hot, or very cold?

Equipment (tools, ladders, material, PPE, etc.)

- Was the correct equipment being used?
- Was the incident caused by failure of the equipment?
- Should the employee have been provided with other equipment that would have reduced the risks or reduced the severity of the incident?
- Was the equipment in good condition? Were there any outstanding repair requests?
- Was the appropriate personal protective equipment available to the employee at the time of the incident?

ATTACHMENT 6 – Motor Vehicle Fishbone Accident Investigation Tool

Motor Vehicle Incident Review Process

PURPOSE:

To Identify root causes and corrective actions which will help prevent a reoccurrence of the incident. In the case of Motor Vehicle Incidents we are frequently working with limited information and need to focus on the incident **and** the qualifications/driving history of the Tyco employee. Additional benefits to doing thorough reviews identifying incident trends, gaps in EHS programs, and other circumstances which could have contributed to the incident.

WHAT INCIDENTS SHOULD BE REVIEWED:

Ideally, all incidents from a minor scratch to major incidents should be reviewed in a comprehensive manner. A Tyco driver frequently having minor accidents has a much higher chance of getting into a major incident than other drivers. In addition, doing a thorough review of every incident sends a clear message that the Management Team is committed to motor vehicle safety**. However, the Fishbone Tool below should only be used for Motor Vehicle accidents that have resulted in personal injury to either party or passengers**.

WHO SHOULD DO REVIEWS:

The process should be led by the reporting employee's Line Manager, with support from the Fleet Department (if required). Senior Managers are responsible for reviewing the quality and accuracy of the investigation. Line Managers/ Fleet Dept are responsible for implementing corrective actions.

WHEN IT SHOULD BE COMPLETED:

The information gathering step (see below) should be completed as soon as possible (within 1 business day). In many cases this can only be accomplished with a phone call area with the face to face discussion held with the driver at a later date. However, it is extremely important that every incident result in direct communication between Line Manager and employee. The analysis and conclusion phases can take longer depending on the complexity of the incident. Corrective actions should be implemented in a timely manner.

HOW IS THE REVIEW DONE:

There are many methods for completing incident reviews. This incident investigation tool uses the **Fishbone Method** for identifying causal factors (things that could have contributed to causing the incident). The causal factors are broken up into four categories; people, processes, environment and equipment to allow for a more thorough analysis of the incident. All possible causal factors should be identified, regardless of how much they contributed to the incident. Once all of the factors have been identified, corrective actions should be developed and then prioritized based on whether they played a big part in causing the incident (primary root cause) or just one of several contributing causes (secondary root causes). There is always more than one causal factor involved in an incident.

4 Steps of Motor Vehicle Incident Review

1. Initial Response – Make sure Police and Medical Response Teams have been notified. (If required) Contact your Manager (or whomever you are required to contact in your Business). You may also be responsible for notifying the insurance department and the FMG Company. If you don't know ask your manager.

2. Information Gathering - If the situation allows, travel to scene to collect information. Things to bring: high visibility vest, camera, tape measure, paper/pen. In most cases you will arrive after the Police and the scene will already be barricaded to prevent access. Take a large number of pictures from various angles and views. In some cases it may be useful to measure relevant distances (skid marks, distance vehicle off road, etc.). **Always wear high visibility vest on active road ways**. Information Needed:

time line of events; have the driver describe their work week (hours worked) and the current work shift in terms of driving routes and intended destination. Detailed description of actual incident (direction of travel, speed of vehicles, etc.). Type of roadway, weather and traffic conditions at time of incident. Complete history of drivers: past accidents, traffic violations, training received, etc. Whether there is GPS device on the dashboard or any other electronic device used for service management (pda, laptop, etc.)

3 Analysis **–** Use the Fishbone diagram on the next page to plot out all of the causal factors (things that could have contributed to causing the incident). We do not need to determine if anybody was at fault as we want to take action to reduce the chances of a similar incident from happening again in the future. Do not be concerned about whether or not we can correct a factor (such as weather) as our goal at this point is simply to outline all of the causal factors. Consider each category carefully and go back to collect more information if necessary. REMEMBER, there is always more than one causal factor. There may also be more than one driver that did something that contributed to the incident; not necessarily caused the incident.

4 Develop Corrective Actions **–** No matter what the circumstances you should be able to take some sort of action which will reduce the chances of another similar incident from occurring. Even if the actions of another, non-Tyco, driver(s) was the primary reason for the incident our driver should have been driving defensively and watching out for others. As a minimum, the driver should receive additional training and the incident should be communicated to the other employees

Examples of Corrective Actions:

- Require driver to go through additional motor vehicle safety training. The training should ideally be targeted on the behaviors involved in the incident (lane change, intersection, backing, etc)
- Communicate details of incident out to all other drivers to raise awareness
- Disciplinary action

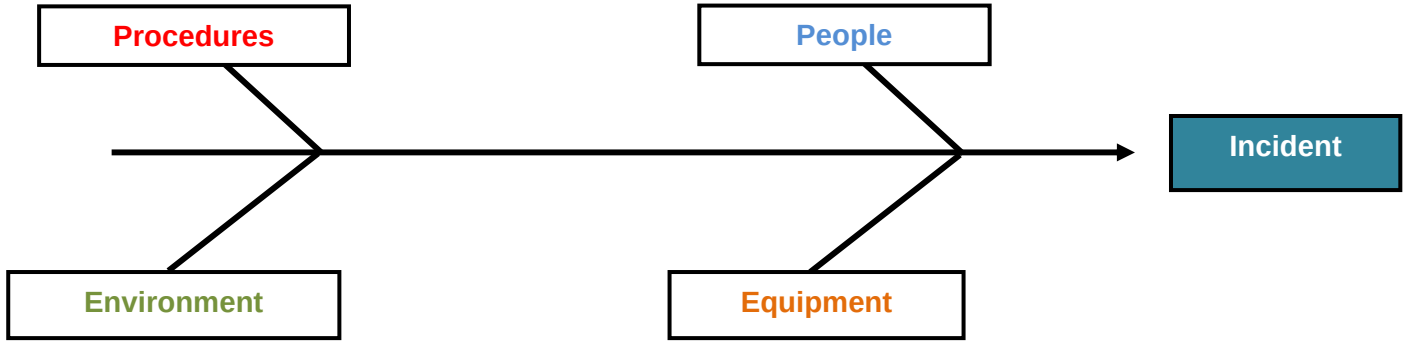
MOTOR VEHICLE FISHBONE ACCIDENT INVESTIGATION TOOL

Procedures:

- Date of last inspection performed, what if any deficiencies were noted
- Are motor vehicle inspections being performed as required
- Is there a motor vehicle safety policy, has the driver been informed of its contents?
- Is there a schedule in place for motor vehicle safety training?

People:

- Was the employee driving at the posted speed limit?
- Was the employee using any sort of electronic device at the time of the incident? Any other distraction?
- Was the employee overly tired; had the employee been working extended hours or consecutive days? Was the employee "on call" or working a shift different from the usual schedule?
- Was the employee an experienced driver, did they know the area, had they been driving this type of vehicle for a long time?
- Had the employee received all of the required EHS training?
- Has the driver had accidents or traffic violations in the past? Any other evidence of driving behaviors that may need to be addressed?
- ***Interview:*** Did the employee feel pressured to get to his/her destination quickly?
- Did the action or lack of action, of other drivers or pedestrians contribute to incident?



Environment:

- Day or night? Was the street illuminated?
- Posted Speed Limit?
- Did the sun create visibility problems for either vehicle(s) or other party involved
- What type of road was it; two lane, secondary, major roadway, etc
- What were traffic conditions, light, medium, heavy, stop/go?
- Did the weather conditions at the time of the incident, or prior to the incident contribute in any way (rain, sleet, ice, snow, wind)

Equipment (vehicle, equipment in or carried by vehicle)

- Was the vehicle used by our employee in good operating condition?
- Was the incident caused by mechanical failure of our vehicle or the vehicle driven by the other driver(s)?
- Were the tires worn? Were they appropriate for the conditions?
- Were portable electronic devices equipped with hands free or otherwise designed to eliminate the need to look down while driving?
- Was the vehicle carrying an excessive load? Was the load inside the vehicle?

Safety Standard

FIRE PRECAUTIONS – WORKPLACE REGULATIONS (1997)

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1 INTRODUCTION

1.1 The **Fire Precautions (Workplace) (Amendment) Regulations 1999** amend the Fire Precautions (Workplace) Regulations 1997. Those amendments were effective from 1 December 1999. The Regulations implement a European Directive on the minimum fire safety provisions required for workplaces. The original regulations allowed exemptions, mainly for premises where a UK local authority had issued a fire certificate (in accordance with Fire Precautions Act 1971). The principal provision of the recent amendment is to remove this exemption. Effectively, from a company viewpoint, these Regulations may now be considered as applicable in full to all Company controlled workplaces. Further to this Regulation, the Regulatory Reform (Fire Safety) Order 2005 was introduced into England and Wales with specific requirements towards fighting fire.

1.2 The key areas for consideration are: -

- Identification of significant fire hazards and conducting a self-assessment of fire risks in the workplace.
- Identification of fire safety measures to insure fire safety.
- Provision of appropriate fire fighting equipment, detection and/or alarms.
- Provision of suitably trained staff to fight fires using this equipment.
- Maintenance of adequate emergency routes, exits, lighting and signage.

1.3 This Company Health and Safety Standard provides guidance on the latest regulations and suggests how within the company, compliance is to be achieved.

2 OUTLINE OF REQUIREMENTS

2.1 The Regulations require that employers (i.e. the controllers of workplace premises) undertake a fire survey of each workplace and make a 'suitable and sufficient' risk assessment of the fire related risks to determine how fire hazards may affect the safety of their employees and/or others.

Furthermore, the regulations require that fire precautions, where necessary, be put in place or where they exist that they are checked for adequacy and that they are satisfactorily maintained.

Article 13 (3a and 3b) of the Regulatory Reform (Fire Safety) Order 2005 requires that companies take measures for fire fighting in the premises as well as ensuring there are sufficient competent persons available to adequately carry out such measures. This includes suitable and sufficient training in the use of fire fighting equipment.

2.2 The assessment process is similar in many respects to that applied to General Risk Assessment described in Company Standard (HSS1).

3 ACTION POINTS

3.1 The Fire Precautions (Workplace) (Amendment) Regulations 1999 require ADT Fire and Security, as employers, to take the following actions: -

- **Carry out a fire risk assessment of each workplace** (which must consider all those employees and other people who may be affected by a fire in the workplace. It must include adequate provision for disabled people or those with special needs that work or may be present in the workplace). The assessment which must be documented should address the whole of each Company operated premises and may comprise one or more **Fire Hazard Identification & Fire Precautions Assessment Sheets** (HSS10.1).

- **Identify and record the significant findings of the risk assessment** and the details of persons who might be especially at risk in case of fire and any measures required to achieve an acceptable level of fire precautions. A copy of the completed assessment should be retained on site for review as required.

- **Ensure the provision of fire precautions** and fire fighting equipment as necessary to safeguard those who use the workplace.

- **Ensure competent persons** are suitably trained in the use of such fire fighting equipment. This training is to be provided to Fire Wardens only. The primary function of Fire Wardens is to ensure the location is cleared of people and not fighting fire. Fighting fire should only be addressed when the fire prevents employees escaping from an area.

- **Develop an emergency plan** that as a minimum addresses actions to be taken in the event of a fire, and/or emergency evacuation and includes suitable arrangements for warning occupants and contacting emergency services.

- **Provide necessary information, instruction and training to employees** about the fire precautions and the plans prepared to deal with emergencies in the workplace.

- **Nominate people to undertake any special roles** that are required under the emergency/evacuation plan to safeguard the safety of employees.

- **Inform other employers, who also occupy workplaces in the building, of any significant risks found during the risk assessment** which might affect the safety of their employees and then co-operate with them in respect of the measures proposed to reduce/control those risks.

3.2 Responsibility for statutory compliance (i.e. ensuring suitable and sufficient fire safety assessments are completed and adequate fire precautions are provided and appropriately maintained) rest with the controller of the premises, i.e. the EHS Building Owner of the Branch / Location.

4 DEFINITIONS AND CONSIDERATIONS

4.1 Identifying fire hazards is the first stage of fire risk assessment. We must then consider how fast and how extensively a resultant fire (and smoke) may spread; what provisions are in place to limit such spread; what facilities are available to enable the escape of people

from the vicinity of the fire or safe evacuation from the building; and what plans we have made (trained and tested) for dealing with the immediate fire situation.

4.2 Consideration of fire hazards should include the following: -

Means of escape
Existing means of escape in the case of fire should be identified and checked as to whether they can be used (check fire certificate plans, where issued). Secondary or alternative routes should also be identified where appropriate.

Compartmentation
Structural fire compartmentation, fire and smoke stop doors should be checked for condition and effectiveness, particularly where forming or leading on to escape routes. Un-sealed openings in floors and structural walls should be particularly noted.

Fire warnings
Arrangements for giving fire warnings should be checked. Detection may or may not be a statutory requirement but the ability to warn all occupants of the premises, in all but very small single storey ground level premises, is mandatory.

Flammable materials
This includes anything that will ignite easily in contact with a means of ignition and which may readily become the origin of a fire. These need to be identified. Consider information from suppliers, COSHH register, known hazardous processes, etc.

Combustible materials
Includes anything that will burn and whilst not easily ignited will contribute to any burning fire. E.g. wooden or upholstered furniture, plastics, curtains, floor and wall coverings etc.

Means of ignition
The means of starting the fire, e.g. lighted match, cigarette, electrical spark, gas pilot light, hot process, etc. These must, as far as possible, be identified.

Hazardous activities
Any work carried out at high temperatures and/or involving flammable materials must be identified and safe working practices i.e. hot work permits implemented.

Maintenance and repair
Where there are few inherent fire hazards fire often breaks out when repairs are being carried out or when some other change occurs in the normal activities of a workplace. Actions of contractors must be considered to ensure that adequate provisions are made.

Fire and smoke spread
Conditions which may help fire or smoke to spread should be taken into account so that, where practicable necessary preventative measures can be implemented. Separation (e.g. by physical barriers) and segregation (by space and distance) between combustibles or flammables are the two greatest influences on a fire spreading.

Horizontal fire and smoke spread in buildings may be assisted by air conditioning or cable ducts, particularly at ceiling level, by large open plan areas or by open or missing doors. More importantly however is vertical spread, which can be very rapid and go undetected

and hence endanger more people. Heat, smoke and fire spread can occur via any vertical non-compartmented flue like opening. Staircases are just such vertical flue like structures with openings into various levels, hence the need for preventing the storage of combustibles within staircases and for paying particular attention to fire or smoke stop doors leading into the stairwells, which normally provide the principle means of escape.

The other factor to be aware of when considering potential fire spread, once a fire is alight, is the 'fire loading' or accumulation of combustibles within the area that will encourage fire spread by direct burning. Generally, the speed of fire spread through combustibles is related to the surface area that is exposed to air as well as their proximity to the heat of the fire (i.e. curtains will general spread a fire more rapidly than tightly stacked paper in boxes and combustibles on open shelving faster than the same combustibles in closed cabinets).

Fire Loading
Fire loading is the amount and concentration of combustibles and flammables within the area. A high fire loading will contribute to a more severe fire with higher temperatures, likely to be more difficult to control. A fire in an area with a high fire loading is therefore likely to have a worst outcome than areas of average or low fire loading.

Fire Fighting
Fire fighting equipments such as fire extinguishers are to be placed strategically throughout the workplace and are only to be used on fires which are small enough to be tackled with a fire extinguisher. Only competent employees that have been suitably trained in the use of fire extinguishers are to use them.

Fire Signs
Fire signage indicating both the means of escape and the position of all fire fighting and alarm equipment is a statutory requirement and it must now be of an approved pictographic type.

5 RISK ASSESSMENT TERMINOLOGY

5.1 **Fire Hazard**
A Hazard is a situation that has the potential to cause harm to persons. In the context of the Company fire risk assessments this would include any conditions where combustible materials may become ignited, leading to a fire in the workplace.

5.2 **Fire Risk**
The Risk in this situation is the likelihood, great or small, that someone will be harmed by the fire hazard. The Fire Risk may be quantified by considering the degree of harm likely to be caused, as a product of Likelihood and Severity. (L x S = R) to produce a **Fire Risk Rating**.

It should be noted that in the context of a fire situation, 'Risk' is not static and fire may develop and worsen until someone extinguishes it or an automatic system intervenes. An important aspect of statutory fire risk assessment therefore is to consider 'Severity' in terms of the potential for a fire or the resultant smoke to spread, the speed of such spread and the degree to which this is likely to harm to or prevent people escaping. The potential for a fire to become extremely large, out of control and/or involve major financial and/or business loses is of course of considerable importance to the company (and may be the justification for making expensive provisions).

However, in the context Fire Precautions legislation, the 'Severity' of a fire risk is considered from its ability to cause death or injury.

5.3 **Fire Risk Rating**

Using the system described in this document, a maximum fire risk rating (i.e. for a situation that is **very possible** [x 5] to cause a **major fire with fatalities** [x 5]) is **25**. By contrast, a work situation, work practice or process that is **almost impossible** to cause a fire with **no realistic chance causing injury or trapping people**, will be rated at **1**.

This rating system which can be followed when assessing fire hazards associated with all activities taking place on our own or others premises shall be used to establish a Fire Risk Rating.

It must be stressed that the numbers involved in this method of quantifying risk do not in themselves have an absolute significance, other than as a basis for categorising hazards or workplaces as being very high, high, normal or low hazard.

Risk Rating may also be used for establishing priority and the need for control measures.

Notwithstanding the above, any task or process which produces a Very High Fire Risk Rating should be urgently examined to decide if it is justified and/or what actions should be taken.

5.4 **LIKELIHOOD (or PROBABILITY)**

The likelihood that a fire may occur.

	Rating
Almost impossible	1
Unlikely	2
Some chance	3
Possible	4
Very Possible	5

5.5 **SEVERITY**

What is the worst possible realistic outcome of the fire?

	Rating
Negligible chance of injury and no chance of becoming trapped	1
Slight chance of injury but without fire or smoke spread	2
Moderate with possible fire spread	3
Severe with probable fire and smoke spread	4
Very severe, major fire and/or fatality	5

6 GUIDANCE ON CARRYING OUT FIRE RISK ASSESSMENT

6.1 A complete fire risk assessment should involve identifying all the significant fire hazards present throughout the entire undertaking (whether arising from work activities or from other factors, e.g. the layout or contents of the premises). Then, evaluating the consequences of fire on the people in the workplace, taking into account whatever precautions are already in place to mitigate the effects of fire.

6.2 The overall fire risk assessment process is carried out in five stages. Working through the FIRE HAZARD IDENTIFICATION & FIRE PRECAUTIONS ASSESSMENT form (HSS10.1)

attached will cover each of these. The completed form should be printed and retained, as the documentary record required under the legislation.

The assessment may be completed for the whole premises on a single form but it may be more convenient where significantly different hazards exist in different parts of the building or where specific processes are involved, to complete an assessment for each area, floor or process. In the case of a large building with several levels, where significantly different escape routes need to be considered, sufficient sheets are required to include the whole premises.

The five steps of the assessment are: -

- **Identify potential fire hazards** in the workplace:
  - Flammable and Combustible Materials
  - Possible sources of ignition
  - Work processes with inherent fire risk
  - Potential for fire or smoke spread

- **Decide who (e.g. employees, visitors) might be in danger** in the event of a fire in the workplace or while trying to escape from it. Consider their location and any factors that may delay or inhibit their exit from the building.

- Evaluate the risks by comparing the likelihood of a fire arising and its severity (or consequences in terms of injury to employees or others) against the various mitigating factors affecting overall fire safety:
  - Fire detection / warning
  - Means of Escape
  - Means of fire fighting
  - Training
  - Maintenance
  - Are the existing fire safety measures adequate?
  - And carry out any necessary improvements

- **Record the findings and details of the action taken** as a result.
  - Prepare an emergency evacuation and fire management plan.

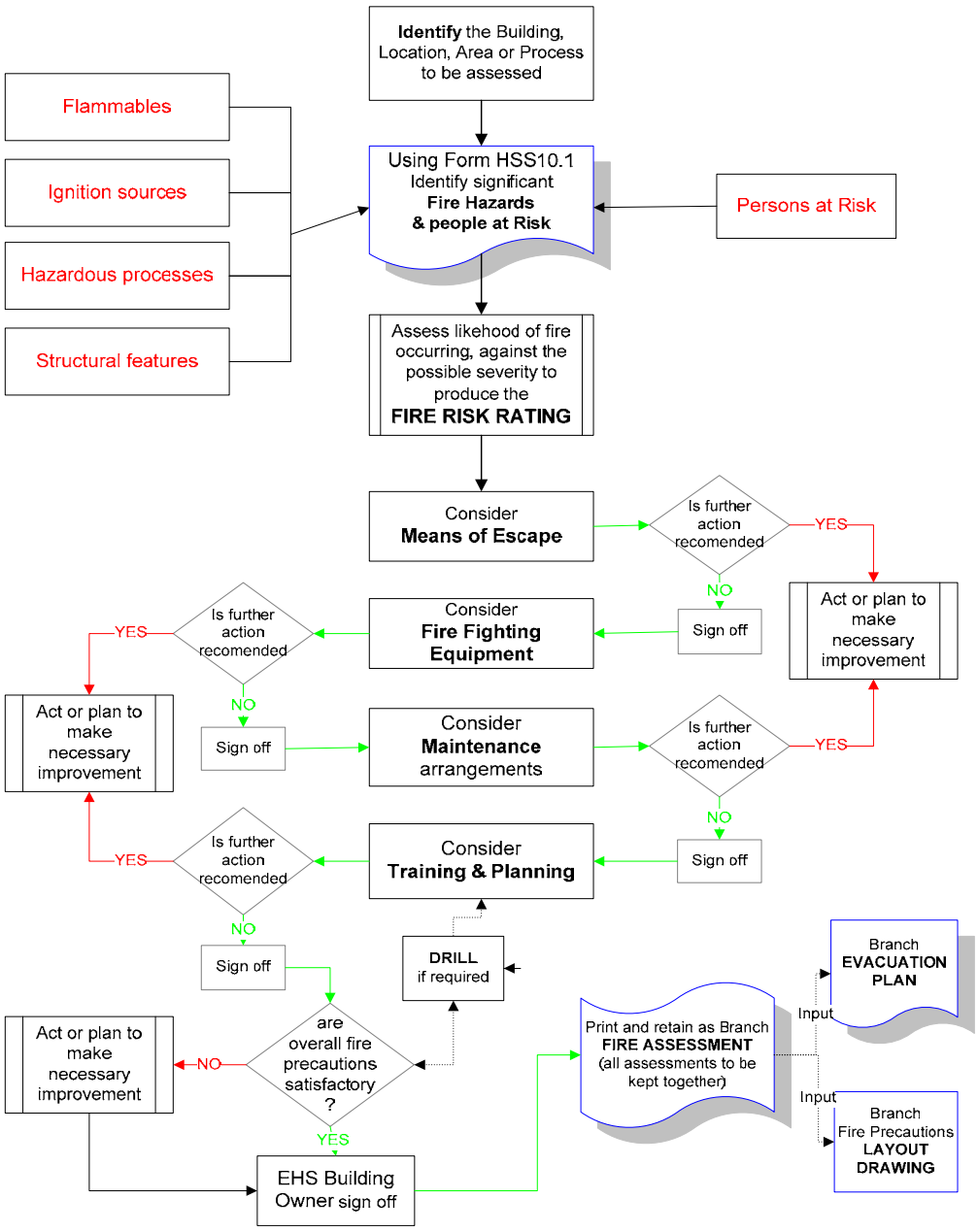
- **Review and revise the assessment** when circumstances change or annually as a minimum. This should be evidenced by a date and the signature of the Fire Risk Assessor as a minimum. This can either be on the actual Fire Risk Assessment or in a review file.

6.3 Arrangements should be in place at branch level to ensure that employees undertaking tasks or exposed to workplace hazards are fully informed of the contents of documented assessments prior to exposure.

The process flow for carrying out fire risk assessment is identified in Section 7.

NOTE: Records may be in the form of any type of media such as hard copy or electronic media, where electronic media is used, ensure there is adequate provision for backup and recovery in accordance with the current PC policy (P0030). Any stated record retention times are minimum retention times only. All records within the required retention period should be EASILY recoverable.

7 PROCESS FLOW TO ENABLE FIRE RISK ASSESSMENT



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1 PURPOSE

1.1 To protect the health and safety of TYCO employees and others from exposure to ionising radiation in the workplace and ensure that radiation exposures, if any, remain as low as reasonably practicable - (ALARP).

1.2 To ensure safe working practices are implemented where TYCO employees are at risk of exposure to radiation and ensure that dose limits specified for individuals are not exceeded.

1.3 To ensure that the **Ionising Radiation Regulations 1999, The Environmental Permitting Regulations 2010, The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009** and other relevant legislation is complied with, wherever applicable.

2 SCOPE

2.1 The standard applies to all employees of TYCO working within controlled radiation areas on customer's premises.

2.2 The standard applies at all Branches and includes rules and requirements for dealing with new and waste detectors.

2.3 The standard includes the transport of detectors from customer premises to Tyco Letchworth for disposal, and includes all ion chamber smoke detectors whether NSL or manufactured by Tyco.

3 INTRODUCTION

3.1 Employees may encounter and need to prevent radiation exposure during the course of their routine activities arising from two separate causes. They are;

- When working on customers premises in controlled areas, where a known source of radiation is strictly controlled by the customer, such as a Nuclear Power Station or Submarine Refit Centre.

- When dealing with products, specifically ion chamber smoke detectors (ICSD), which contain small amounts of radioisotopes.

3.2 This Health and Safety Standard outlines the minimum requirements for working in controlled areas and details specific requirements of the regulations, providing guidance on how we, as a company, will meet those requirements.

3.3 The most significant operational effect of the legislation listed in 1.3 above, as far as the Company is concerned is that it details the licensing exemptions and requirements and places requirements and restrictions on packaging, despatch, storage, and transport of Ion Chamber Smoke Detectors (ICSD) within the United Kingdom. It covers all movement of these detectors including hand carriage.

3.4 The keeping and disposal of radioactive materials is controlled within England and Wales by the Environment Agency who is responsible for enforcement of the **Environmental Permitting Regulations 2010.** Radioactive substances regulation is carried out by similar agencies in Scotland and Northern Ireland. The Health and The Health and Safety executive are responsible for the enforcement of the **Ionising Radiation Regulations 1999.**

3.5 The storage and transport of liquid level gauges containing any radioactive source is prohibited.

3.6 The key areas covered by this standard are therefore: -

- Working in Controlled Areas
- Working with products containing radioisotopes, including
    - The removal of ICSD from customers' premises;
    - The packaging, despatch and transport of ICSD within the United Kingdom and to and from countries who are signatories to the International Atomic Energy Agency (IAEA);
    - The storage of ICSD at the Branch;
    - The disposal of ICSD. It is imperative that these detectors are always disposed of correctly; and never disposed of into a skip or landfill;
    - An incident reporting procedure.

4 RESPONSIBILITIES

At Branch level, the following responsibilities apply: -

4.1 General Manager

- To commit organisational, financial and administrative resources to establish & maintain safe radiation practices
- To ensure that this standard is adhered to in every respect at Branch level;
- To ensure that there is an appointed Radiation Protection Supervisor within the Branch who is trained and working to this standard;
- To ensure that receipt, storage and despatch of radioactive detectors meets both statutory and corporate requirements;
- To ensure that regular compliance audits of this standard are conducted.

4.2 Company Radiation Protection Supervisor (CRPS)

- To ensure that this standard is audited annually;
- To ensure that this standard complies with Company and Legislative requirements.

4.3 Local (Branch) Radiation Protection Supervisor (RPS)

- To ensure that this standard is followed at Branch level;
- To notify the CRPS in the event of an incident.

4.4 Employees

- To comply with the requirements of this standard and to prevent radiation exposure
- To report all facts to their immediate line manager regarding any accidents resulting in personal injury, illness or accidental release or hazardous exposure to radioactive substances and any actions or conditions that could result in such incidents.

5 GENERAL REQUIREMENTS

5.1 Working in Controlled Areas

TYCO employees are not to enter controlled radiation areas without observing the following As a minimum:-

- Meeting all the criteria for an "authorised person" as defined by controller/owner/contractor of the premises concerned.

- Receiving instruction and training in general radiation hazards and any specific job related hazards to enable employees to conduct their work safely.

- Following any and all site rules, permit to work schemes, and safe systems of work operated by site controllers.

- Wearing a personal dose meter to document their radiation exposure. These would be typically provided by the site controller as part of their radiation safety procedure.

5.2 Ionising Radiation Exposures

Much of the potential for employee radiation exposure is encountered while conducting routine tasks at customer's sites. In such instances it is normal for the site controller to exercise a high level of control over contractors working at their site, and TYCO employee's co-operation with all site requirements will generally ensure that any potential for exposure is minimal. TYCO employees however must practice the following fundamental methods of reducing dose or exposure.

Time: Radiation is emitted at a constant rate from radioactive substances; therefore, the radiation dose will be proportional to the amount of time spent in proximity to the source. Reducing the time spent working with radioactive materials as much as possible will reduce the overall dose accumulated.

Distance: Radiation exposure decreases with the distance from the radiation source. Therefore, employees must evaluate the job task to ensure that maximum distance from the source is maintained.

Shielding: Radiation exposure is minimised by placing a shielding material between the source and the individual. Although any material provides some shielding, lead is commonly used for shielding x-rays and gamma radiation. If using this method to reduce dose, employees must ensure that the shielding material provides adequate protection from the radiation source

Where work is carried out in controlled areas on another employer's site, a dose assessment should be provided; these should be forwarded to the branch Technical Manager, or other nominated person. Doses should be checked to ensure they are ALARP and to ensure that the Company's dose investigation level of 1 mSv in a calendar year has not been exceeded. Should this level be exceeded an investigation should be carried out in consultation with the Company RPS to determine the reason for the dose and to identify if any further controls that are required to restrict exposure.

5.3 Products Containing Radioisotopes

TYCO employees may, from time to time, deal with products which contain small amounts of radioisotopes (e.g. old and obsolete ion chamber smoke detectors). Although the intensity and likely dose of radiation is small, there are still strict procedures for handling, storage and disposal of such materials. The remainder of this standard relates to points that require attention when removing, packaging, despatching, transporting or storing Ion Chamber Smoke detectors by Branches, in a manner that satisfies Company and statutory requirements.

6 REQUIREMENTS FOR THE HANDLING & MOVEMENT OF ION CHAMBER SMOKE DETECTORS (ICSD)

6.1 Removal of Ion Chamber Smoke Detectors (ICSD) from Customers Premises

Health and Safety is of the utmost importance when handling ICSD.

6.1.1 Detectors are categorised by transport/packaging requirements based on the type and strength of the radioactive source they contain and hence the degree of hazard they present. Generally, new detectors that are packed in 'excepted' packaging and are the least hazardous. Old, obsolete and waste detectors are categorized by transport and packaging requirement, as described below.

Damaged detectors or detectors suspected of being damaged, of whatever type, should be considered separately and specially packaged (see section 6.3.4)

Detectors without identification, or with an unknown identification, should be referred to the Company Radiation Protection Supervisor.

6.1.2 Only competent fire engineers are allowed to remove redundant ion chamber smoke detectors. Only devices containing Am241 up to a level of 0.2 MBq shall be installed, and only then when required as a one for one replacement of existing ion chamber detectors.

6.1.3 Detectors delivered to customers sites or Branches from Tyco Letchworth will meet the criteria for 'excepted' packages.

6.1.4 Detectors for return must be packed correctly as detailed below, with a consignment certificate and Service Detector Movement Docket (completed before collection from site). One copy of the documentation should remain on site with the customer (this notifies the customer of the number and type of detectors removed).

6.1.5 It is Company Policy for engineers not to remove detectors from the customer premises unless they meet the criteria for 'excepted' packages. Consignments that do not meet this packaging criterion must be appropriately packed and arrangements made for return directly from the customer premises by an ADR certified carrier.

6.2 Packaging and Despatch of Ion Chamber Smoke Detector (ICSD) within the UK
This section covers the collection and despatch of waste detectors from the customer premises via the Tyco Letchworth warehouse to their final destination.

6.2.1 Detectors must be sorted into their correct categories before packing and despatch, as different transport regulations apply to different detectors.

6.2.2 Full detail, including the stock code number of scrap detectors must be provided on the consignment note and/or service detector movement docket.

6.3 Packaging Requirements (see also Equipment and Materials, Section 9).

6.3.1 **'Excepted' category <u>UN2911 – Excepted Package- Instruments or Articles</u>**

The following devices are categorized as 'excepted' packages for transport purposes: - Costs for disposal via Tyco are correct at the date of review.

Detector Type	Activity Level	Other Supporting Ref and/or Description	Tyco Charges/unit
F300 Range	2.22 MBq	High Activity	£20.00
F500 Range	2.94MBq – 3.7 MBq		
F600 Range	555 kBq	Unique to Cerberus. Medium activity	£7.50
F700 Range	≤370kBq	Low activity	£6.50
Tyco Range			
NSL			
Radium	≤370kBq	NSL Nittan NID 28Radium detector	£77.00

The maximum activity of individual items within a consignment is 10MBq – (All detectors are below this.)

The maximum allowable activity in any one consignment is 1GBq, given that consignments are likely to consist of tens of detectors, this limit should never be exceeded.
The requirements for shipment are:-

- A Consignment Certificate (HSS11.2) and Service Detector Movement Docket (HSS11.1) is to be used for Branch disposals.
- Detectors must be complete and undamaged.
- Trefoil labels x 2 must be stuck inside the cover before closing the box (so as to be visible when the box is opened).
- Detectors are to be sorted and packaged by type.
- No radioactive labelling is required on the outside of the box; however, the box should be marked with the relevant UN number (UN 2911).
- The box should be robust enough to withstand the normal rigours of transport and should remain sealed.
- Consignor and consignee details should be affixed to the box.
- Either the Branch or a courier service can transport 'Excepted' category goods.
- Damaged detectors must be segregated, packed in a sealed plastic bag and then in any suitable cardboard box, so they are not further damaged in transit.

Forms are available from Tyco, Letchworth and also **HSS11.1** and **HSS11.2**

All consignments of ICSD despatched by and received from Tyco, Letchworth are 'excepted' packages. Invoicing for disposal will be notated – 'P/N: DET DISP.'

- Consignment Certificate (HSS11.2) and Service Detector Movement Dockets (HSS11.1) are to be used for disposals/removals from customer premises;
- Must be packed in a sealed polythene bag, then packed in cardboard box to ensure detectors are not damaged in transit;
- Two trefoil labels must be placed inside the cover before closing the box (so as to be visible when box is opened);
- Detectors are to be packed with a maximum of 50 per box;
- Detectors are to be sorted and packaged by type, damaged detectors separately packed;
- Radium detectors (Ra226) must not be removed to APC's and must be sent direct from Customers' premises to Tyco, Letchworth.
- These detectors must only be transported by an ADR certified carrier. **A general contracted carrier or Company transport is not acceptable.**

6.3.4. **Damaged Detectors (All Types)**

Detectors of all types must be returned to Tyco for disposal if they are found to be superficially damaged.

An engineer report card AM1639/000 must be completed for each damaged device. Each must be placed in an individual sealed polythene bag, labelled with the type of device, the damage sustained and the site from which it has been removed. Devices must then be packed and shipped as detailed in this standard. If the damage is serious enough to expose the source holder, special packaging will be required and advice must be sought from the Company Radiation Protection Supervisor or the QHSE Department.

Gloves meeting BS EN 421 are a necessary precaution and must be worn when handling or packing superficially or fire damaged detectors in case the source has become damaged. Place the plastic bag provided over damaged detectors prior to removing them from their base.

It is not necessary to use gloves for handling undamaged Detectors.

6.3.5 **All consignments (Documentation)**

Any ICSD despatched to TSP without the correct paperwork and/or packaging will be rejected with a recharge for packing and transport, plus a handling charge for each detector.

6.4 Carriage of Ion Chamber Smoke Detectors and Driver Training

6.4.1 **'Excepted' Packages**

Drivers must be made aware of the risks and hazards in transporting these products, and receive Radiation Awareness training...

Maximum package limit is 500 detectors in any one trip.

A notice in the vehicle is not required.

These are the only type of devices where transport by Company vehicle is permitted.

The maximum number of packages per consignment is unlimited but the total consignment must be below 2GBq

6.4.2 **Records**

Copies of the Consignment Certificate HSS11.2 must be retained at the relevant branch for a period of 5 years following confirmation of transport to Tyco Letchworth.

7 REQUIREMENTS FOR STORAGE OF PRODUCTS CONTAINING RADIOISOTOPES & ION CHAMBER SMOKE DETECTORS

7.1 Company Sites

The Health and Safety Executive is responsible for enforcement of the Ionisation Radiation Regulations 1999, and the Environment Agency (EA) is responsible for enforcement of the Environmental Permitting Regulations 2010 (EPR2010) together they enforce very strict control of the storage of radioactive materials within UK.

An amendment to EPR2010 allows the storage of ICSD without the need for a permit to do so provided the individual source activity does not exceed 4 MBq and the total activity does not exceed 200 MBq. For detectors not exceeding 40 KBq, such as those supplied by the Company, this equates to 5000 ICSDs. This exemption from the need to have a permit is granted with the following conditions:

- Adequate stock records are kept, detailing the location on the premises; these should be made available to the EA on request (See section 7.4 below)
- Individual ICSD are marked or labelled as radioactive
- ICSD must be held safely and securely to prevent loss, theft or damage
- Losses or theft of ICSD whose total activity exceeds 100 kBq is reported to the EA. Waste sources are not accumulated for longer than 26 weeks before disposal

7.2 Storage on Customers' sites

Storage of detectors on customer's sites is not permitted unless this is carried out in agreement with the customer and in accordance with the above exemption conditions. Note that there is no limit on the number that may be kept if ICSD are affixed to a building

Only new ICSD for immediate installation are to be delivered or taken to Customers sites.

'Accepted' waste (scrap) detectors that have been removed from the customers systems must be shipped to TSP immediately for disposal.

7.3 Storage on Company Vehicles

Only 'excepted' packages of ICSD are to be carried on Company vehicles

Wherever possible, ICSD should be collected from Branches for immediate installation only and uninstalled detectors should be returned at the end of the working day for overnight storage

Company vehicles must not be used for overnight storage of ICSD. When a company vehicle is not being used on company business or when it is parked in a public area

overnight, all ICSD should be removed from the vehicle and placed in suitable storage. In the event that it is not possible to return detectors to the Branch store, suitable alternative arrangements must be made. The Radiation Protection Supervisor should be contacted in case of difficulty.

When Company vehicles are being used for private purposes, detectors must be removed and be placed in a secure storage facility. Users must be familiar with this procedure.

7.4 Storage on Company premises

ICSD's being returned from customers systems must be shipped to Tyco Letchworth as soon as is practicable, with a maximum ' in transit' storage time on Company premises of 14 days to allow for extended seasonal office closures, and unforeseen events which may prolong suspension of office availability.

7.5 Records of radioactive materials

Records must be kept detailing the number and type of smoke detectors held on the premises at any one time and their location. These should distinguish between new detectors in stock and waste sources in separate storage pending transfer to Tyco Letchworth for disposal.
Source accountancy checks will be undertaken continuously and recorded.

8 CONTINGENCY PLANS INCIDENT REPORTING

In the event of any incident it is necessary that the following actions are taken and promptly reported to the local Radiation Protection Supervisor in the first instance.

In the case of serious or significant incidents/accidents the Radiation Protection Supervisor should be contacted but if unavailable contact the Company Radiation Protection Supervisor or the QHSE Department.
In any incident where damage to a source is suspected and radioactive contamination may have leaked the RPA should be contacted for advice (see section 10).

8.1 Lost / Stolen fire detectors

An immediate search must be made. If the detector cannot be found within 1 hour, or as soon as theft is confirmed, contact Company Radiation Protection Supervisor or the QHSE Department. Losses or theft of more than 100 KBq of activity (more than three standard ICSD) must be notified to the HSE and the EA.

8.2 Fire damaged detectors

The Company Radiation Protection Supervisor or the QHSE Department must be contacted immediately. No one should attempt to move the detectors after a fire as there may be contamination as a result of the fire. Access to the detectors should be restricted. The RPA should be contacted for advice and will be able to provide monitoring assistance if deemed necessary.

8.3 Mechanical damage to fire detectors

Contact the Company Radiation Protection Supervisor or the QHSE Department immediately warning there is a possibility that the source/detectors are damaged, which could lead to contamination. An ICSD with a suspected damaged source should only be handled if wearing gloves and should be placed in a bag and sealed along with the gloves.

Access to the source should be restricted and the RPA should be contacted for further advice and can provide monitoring assistance if necessary.

8.4 Road Traffic Accident whilst carrying fire detectors.

Certain actions should be taken in the event of a road traffic accident. These actions are summarised below:-
The first priority in the event of a road traffic accident is to save life and prevent further injury, including the prevention of vehicle fire.

If, after the incident, the vehicle is still road worthy and the detector is undamaged, then return to the Branch. If the vehicle is not roadworthy but the detector is undamaged then contact the Branch and arrange for another vehicle to collect the detector.

In the event that the vehicle has overturned, suffered serious damage or been involved in a fire, or a detector has been stolen from the vehicle or damaged in the accident then the Police, the Radiation Protection Supervisor, the Company Radiation Protection Supervisor and the QHSE Department must be contacted and informed of the accident.

If it is suspected that a detector may have been damaged, then the detector cannot be transported until the advice of the RPA is sought. If the source is suspected to have been damaged then follow the steps in 8.2 and 8.3 above.

9 EQUIPMENT & MATERIALS

The following equipment and materials are necessary to comply with the above. Branch handling the collection, packaging, despatch, storage or carriage of ICSD should ensure supplies as appropriate.

ITEM	STOCK CODE
Polythene Bag (for single detector or multiple detectors within a box)	N/A
Branch Returns Note (BRN)	N/A
Service Detector Movement Docket	N/A
Radioactive Label Trefoil ('Excepted')	N/A
Consignment Certificate	N/A

N.B

The following abbreviations may be found in the above text:-

ICSD -	Ion Chamber Smoke Detector
CRPS -	Company Radiation Protection Supervisor
RPS -	Radiation Protection Supervisor (Branch)
ADR -	European Agreement Concerning the International Carriage of Dangerous Goods by Road
Am241-	Americium 241 Isotope
KBq -	Kilo Becquerels
MBq -	Mega Becquerels
MF/TRS/612&9121	Includes all Ion detectors and variants
µCi -	Micro Curies

10 RADIATION PROTECTION ADVISOR (RPA)

The RPA provides advice to the Company on compliance with relevant legislation

Public Health England
Centre for Radiation, Chemicals and Environmental Hazards
Chilton
Didcot Telephone: 01235 831 600

Principal contact: Jonathan Fawcett Tel: 01235 822 829
Back-up contact: Mike Potter Tel: 01235 822 685

Out of hours telephone (for emergency use only): 01235 834 590

The out of hour's emergency number connects with the HPA emergency on-call service.

The caller should state the emergency assistance of HPA as their RPA is required and give the name of the usual contact.

NOTE: Records may be in the form of any type of media such as hard copy or electronic media, where electronic media is used, ensure there is adequate provision for backup and recovery in accordance with current I.T. policy. Any stated record retention times are minimum retention times only. All records within the required retention period should be EASILY recoverable.

WORKPLACE PLANNED INSPECTIONS

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1 INTRODUCTION

1.1 The **Workplace (Health, Safety and Welfare) Regulations 1992** complete a series of six health and safety regulations implementing EC Directives that came into effect in the early nineties. They cover a wide range of basic health, safety and welfare issues and apply, in general to most workplaces (except construction sites and certain other working locations where more specific legislation applies). For ROI Chapter 1 of part 2 of the General Application Regulations 2007 applies.

1.2 In the context of this Company Standard the 'Workplace' is taken to be the Tyco controlled or occupied premises to which employees are attached and are engaged in their regular working activities, e.g. Head Office, Branch or office location. The workplace will include any car parks or grounds and any other external areas, as well as common internal areas of buildings such as plant rooms, corridors, staircases storage areas etc to which employees or others may have access

2 OUTLINE OF REQUIREMENTS

2.1 Employers have a general duty under section 2 of the Health and Safety at Work etc Act 1974 (for ROI Chapter 1 of Part 2 of the Safety, Health and Welfare at Work Act 2005 applies) to ensure; so far as is reasonably practicable, the health, safety and welfare of their employees at work. People in control of non-domestic premises have a duty under section 4 of the Act towards people who are not their employees but use their premises. The 1992 Regulations expand on these duties and are intended to protect the health and safety of everyone in the workplace, and ensure that adequate welfare facilities are provide for people at work.

2.2 The regulations aim to ensure that workplaces met the health, safety and welfare needs of all members of the workforce, including people with disabilities. Several of the regulations require things to be 'suitable'. Regulation 2(3) makes it clear that things should be suitable for anyone. This includes people with disabilities. It is important to ensure that the workplace, particularly means of access and egress, circulation and traffic routes, toilets and workstations, are suitable for all people and particularly those with disabilities.

3 EMPLOYERS DUTIES

3.1 The regulations require Tyco, as the employer and in control of the building to: -

- Maintain the internal work environment, such as ventilation, heating and lighting.
- Manage the movement of vehicles and pedestrians in the workplace.
- Preventing persons falling from height or being struck by falling objects (this is detailed separately).
- Provide a safe workplace where hazards are identified and as far as reasonably practicable controlled or minimised.
- Identify, provide and maintain any necessary safety, personal protective or fire precautions equipment.

- Maintain the workplace structure and building fabric, building services, furniture and equipment in a safe condition.
- Provide and maintain adequate and sufficient welfare facilities such as sanitary and washing facilities.
- Ensure safety in the storage and movement of goods and materials.

3.2 Responsibility for statutory compliance rests with each Line Manager within the area of their direct control, the Business Unit Leader, the Tyco board of directors in UK and Ireland and ultimately the President of the UK & Ireland operation.

3.3 In order to ensure compliance it is necessary that the physical conditions and working practices in work premises are regularly monitored, that the responsibility for corrective action is established and that remedial measures are followed through to an appropriate conclusion. This Standard details a Planned Inspection process suitable for customising to local circumstances for monitoring the physical conditions on site.

4 MAINTAINING A SAFE PLACE OF WORK

The following areas are those of potential concern and whilst not exhaustive should be included in the planned inspection process

4.1 **Housekeeping**

Fire hazards, illness, health and injury accident risks are all increased by poor housekeeping standards

Many accidents involving slips, trips and falls can be avoided if housekeeping rules are followed.

Particular attention should be paid to clearing of spillage's, removal of waste products and storage of items, creation of obstructions and other slipping and tripping hazards

Workplaces, furnishings and fittings must be kept sufficiently clean with all walls, floors etc capable of being effectively cleaned.

Waste materials for disposal must not be allowed to accumulate.

4.2 **Access and egress**

Floors and traffic routes must be suitably constructed, with no holes or slopes likely to cause a risk. All road ways, gangways, corridors, stairwells and fire routes must be kept clear of obstruction at all times. Floors must be adequately drained. Handrails or barriers provided where necessary. Self-closing fire doors should be kept closed (unless released by fire detection system) but should allow escape from occupied areas in case of fire.

Access to emergency equipment must be kept clear. Fire exits must be kept clear; Access to confined spaces requires the operation of a 'Permit to Work' system.

4.3 **Heating and ventilation**

A reasonable working temperature must be maintained in all workplaces during working hours and effective and suitable ventilation must be provided for every enclosed workplace.

4.4 **Fire Precautions**

Adequate fire precautions shall be available, maintained, and readily accessible

4.5 **Lighting**

Every workplace must be provided with suitable and sufficient lighting.

Emergency lighting must be provided where necessary to facilitate escape.

4.6 **Noise**

Avoidable noise hazards should be minimal and unavoidable noise exposure must be adequately controlled.

4.7 **Hygiene**

On site hygiene standards must be maintained at appropriate levels. Particular attention must be paid to the adequacy and condition of washing and toilet facilities and the cleanliness of any cooking or eating areas.
Pest control arrangements, where appropriate are required.

4.8 **Room dimensions and space**

Sufficient space, height and floor area must be provided in every workroom.

4.9 **Windows and doors**

Windows or other transparent surfaces in doors must be constructed of a safety material protected against breakage. Limit stops must be fitted to prevent windows being opened too far and the bottom edge of an opening window must be at least 800mm above floor level.

4.10 **Facilities to rest and to eat meals**

Suitable and sufficient rest facilities must be provided, including eating facilities where appropriate and facilities for pregnant women to lie down and rest.

4.11 **Storage**

Storage safe practice, means of moving, methods of stacking and facilities such as racking or shelves provided should all be appropriate to the operation.

4.12 **Internal Transport**

Only fully trained and licensed people may use any powered vehicles on site.

4.13 **Waste Management**

The temporary storage and disposal of all waste, reclaimable or otherwise should be controlled, in line with good environmental management practice and statutory obligation.

4.14 **Safety and Warning Signs**

Site safety and warning signage should be adequate, appropriate and in compliance with current statutory provision.

5 FIRST-AID/ DEFIBRILLATOR

5.1 Adequate first-aid cover must be provided at all workplaces. The exact number of qualified first-aiders or 'appointed persons' who should be available depends on many variables including the number and location of the employees and the hazardous nature of the operation. Typically, a low risk office environment would require at least one first-aider for 50 persons and one for each 100 thereafter. Appointed persons, who are not trained to the same qualification level as first-aiders and who should not render first-aid treatment, but who are competent to deal with accident situations, are required to deputise during temporary absence of first-aiders.

5.2 All required first-aiders must have received approved training and hold a valid First-Aid at Work Certificate. Arrangements for renewal of First-Aid certificates must be made prior to expiry. Additional training is required if renewing expired certificates.

5.3 Responsibility for the contents of First-Aid boxes should be assigned to first-aiders/ EHS coordinators. It should be reviewed monthly using form HSF12.3 form and any missing items replaced. Guidance on items for inclusion in first-aid boxes is provided on form HSF12.3, however this can be expanded/ amended to suit location.

5.4 The names and locations of first-aiders must be displayed, or otherwise communicated to all employees on site. Exact location of Defibrillators must be displayed.

5.5 All Defibrillators must be checked monthly to ensure fully charged and recorded on form HSF12.3

6 PLANNED INSPECTIONS / SAFETY CHECKS

6.1 Branches are required to establish a system of planned safety inspections covering the physical conditions and work practices at branch locations. This is not an in depth audit of safety management systems nor an examination of documentary evidence as will be carried out during annual Environmental, Health & Safety audits but rather a regular hazard spotting site safety tour by managers and others.

6.2 Inspections will be undertaken to coincide with EHS Committee meetings, when matters beyond immediate resolution may be properly considered. As these EHS Committee meetings are held at a minimum once per quarter that would provide four inspections of the site per annum. Where serious issues are encountered and it is obvious that the inspection regime is not enough to ensure the safety of our employees, more frequent inspections will be adopted under the authority and control of the QEHS Specialist.

6.3 Managers, EHS Committee members, safety representatives or other suitable staff as agreed with the Business Unit Leader may be assigned to conduct regular planned inspections of the branch premises. The inspections will cover all workplace areas and those parts of the facility which are normally accessible to employees or contractors during the course of their proper activities. Except in very small premises, sufficient persons should be assigned in order that they may impartially inspect an area that they do not normally work in.

The Business Unit Leader and EHS Committee Chairman (this can be same person) should be scheduled, at their convenience to accompany one inspection per area per year.

6.4 The EHS co-ordinator or QEHS Specialist, or other appointee from within the EHS Committee, will administer the inspection procedure, maintain and monitor the inspection schedule and maintain inspection records. He/she may, or may not, be assigned to participate in the actual scheduled inspections (as they wish). Their prime responsibility however is to make sure that inspection checklists are circulated and returned on time, that inspections are carried out, that any problems which cannot be readily resolved are brought to the attention of the committee and that records of the process are kept. It is probably best if the EHS co-ordinator / QEHS Specialist is not scheduled for any inspections but carries out those where a scheduled inspector is absent or unable, for whatever reason, to complete a planned inspection. The EHS Co-ordinator / QEHS Specialist would also undertake any follow up inspections required to maintain accurate up to date records.

6.5 The premises should be divided into easily manageable inspection areas and a checklist (based on HSF12.1) covering all the likely hazards within each area, used to report findings. Typical checklists, covering each area and addressing many of the common problems likely to be encountered are attached to this standard but EHS co-ordinators / QEHS Specialists are reminded that these checklists are not necessarily exhaustive or appropriate in every case. Blank sections are available to enable checklists to be customised to suit specific branch locations.
Section 4 above provides guidance on the hazard areas and categories that may require attention. These may be summarised as: -

- Housekeeping and general environmental conditions
- Fire precautions and means of escape
- Work equipment, machinery, electric's etc
- Health and hygiene
- Working practices
- Storage
- Waste management
- Racking/ Shelving

6.6 As part of workplace inspections the racking and shelving within the location must be visually checked and recorded using HSF12.4 form. This completed form must accompany completed HSF12.1 forms at EHS meetings for review.

6.7 Approximately one week / ten days prior to scheduled inspections, the EHS co-ordinator / QEHS Specialist will circulate the appropriate blank check list to each person undertaking an inspection.

Inspections are scheduled so that items which cannot be readily resolved during or immediately following the inspection process may be considered at the next EHS meeting whilst they are still topical (i.e. within 7-10 days). Those carrying out inspections should arrange to complete and return completed check lists on schedule to the EHS co-ordinator / QEHS Specialist so this is possible.

7 GUIDANCE ON COMPLETING PLANNED SAFETY INSPECTIONS

The planned inspection checklist / report (HSF12.1) is a form, for hand written completion, during a walk round safety tour of the branch premises. This can however be completed electronically following inspection.

This form can be customised to suit the actual premises or branch to be inspected. Provisionally completed generic area planned inspection checklists HSF12.1 (covering the more common hazards likely will be found are available **(in MS Word version)** on company Intranet, to be for 'saved as.' and amended to specific branch checklists.

The planned inspection should be completed using a branch specific checklist as follows:-

The date and name of person(s) carrying out the inspection (or accompanying, if appropriate) should be entered.

Each listed item / requirement should be considered.

If satisfactory, (i.e. no substandard conditions are found), a 'Y' (i.e. acceptable – Yes) should be entered against the item.

In a case of doubt or where an obvious substandard condition exists, a brief description should be provided in the comment column, together with identification of the person responsible and a date for completion when this can be immediately established.
The severity of substandard conditions should be determined and a priority indicated in the appropriate column.

'A' is to be cleared at once, during the inspection if practicable, or referred to an appropriate line manager (and/or the Business Unit Leader) at the time of the inspection for immediate action. – 'A' status would normally indicate a serious potential hazard.

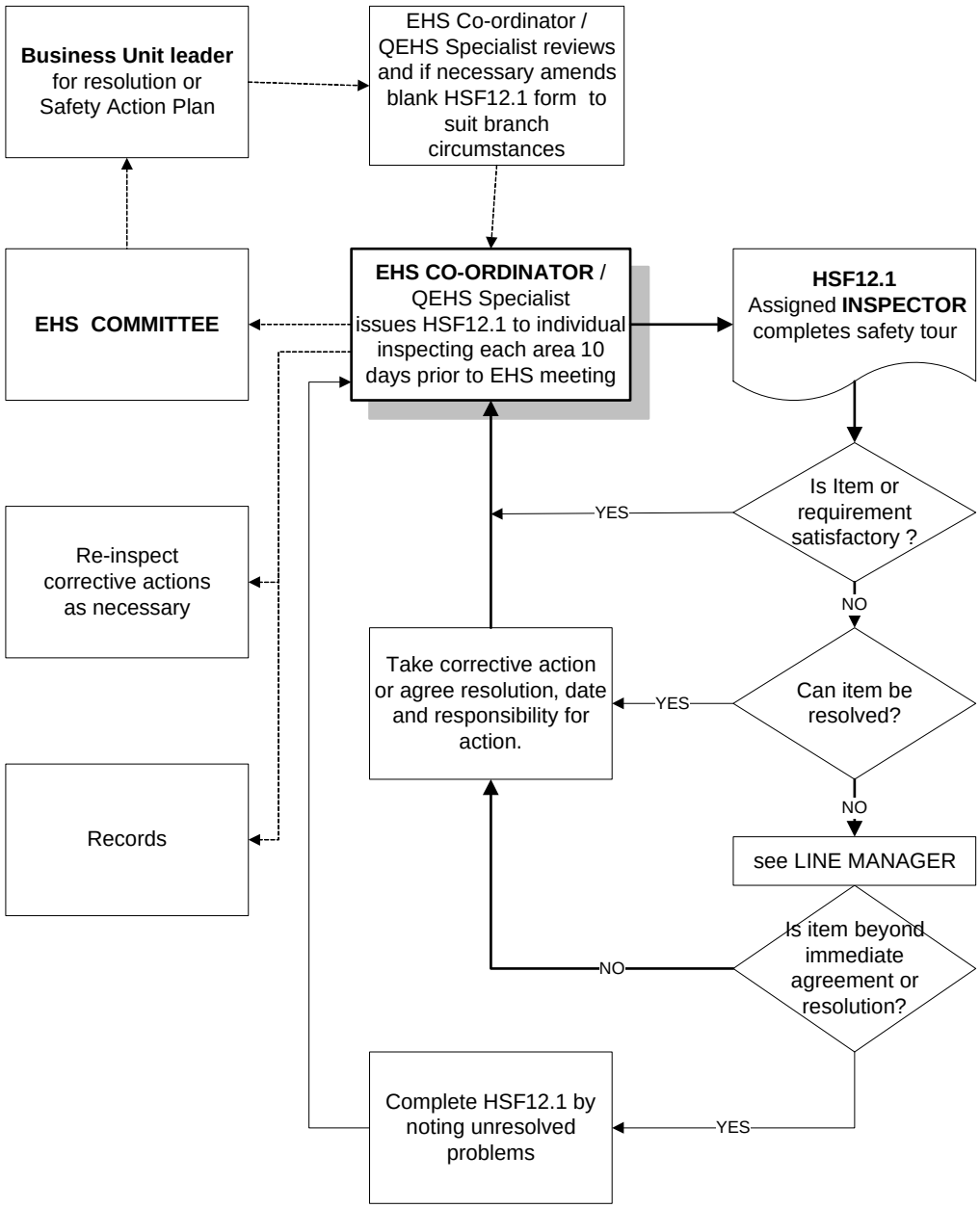
'B' is a condition that should be cleared within 24 hrs and re-inspected after that period. It will normally be a condition or working practice which presents a potential hazard that should not be allowed to continue indefinitely, which is relatively easy to clear, and the person carrying out the inspection can arrange this directly, through an appropriate line manager or the Business Unit Leader.

'C' is a condition or working practice that is not easily cleared, requires money to be spent, and is beyond the immediate resolution of inspector or line manager (or a hazard that has been previously reported and remains unresolved or is repeated). This category will be referred by the co-ordinator to the EHS committee for a decision on further actions to be taken.

Completed Inspection reports should be returned in ample time to the EHS co-ordinator / QEHS Specialist. Late or non-returns should be recorded and reported to EHS Committee.

NOTE: Records may be in the form of any type of media such as hard copy or electronic media, where electronic media is used, ensure there is adequate provision for backup and recovery in accordance with the current policy. Any stated record retention times are minimum retention times only. All records within the required retention period should be EASILY recoverable.

8 PROCESS FLOW TO ENABLE PLANNED SAFETY INSPECTIONS



OPERATION OF THE PERMIT TO WORK PROCEDURE

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H&S Work Instruction

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1 PURPOSE AND SCOPE

A 'Permit to Work' is a formal document used when working in hazardous conditions. The permit to work will identify the hazards, specify control measures and describe work procedures.

2 RESPONSIBILITIES

The manager in charge must issue a permit to work before any of the following work activities in this procedure can take place.

3. GENERAL WORK PERMIT – HSWI 3.1

This will be issued to all contractors carrying out any maintenance / engineering work on site. There will also be a requirement to issue a specific permit to work if a hazardous activity such as hot work is to take place.

4 HOT WORK PERMIT – HSWI 3.2

Operations involving highly flammable liquids, arc welding and cutting equipment, brazing and soldering equipment, gas torch, bitumen boilers, or other equipment producing heat or having naked flames should not be carried out in areas or buildings on site unless:

- A 'Permit to Work' has been issued by an authorised person i.e. Facilities Manager or Manager/Supervisor having control other the work activity.
- The precautions in the work permit have been carried out.
- A nominated person supervises the work.

5 CONFINED SPACE WORK PERMIT – HSWI 3.3

Work in a confined space may only be undertaken if it is not reasonably practicable to perform the necessary work in any other way and the permit to work is used to ensure that such work is safe and without risks to health.

An authorised person i.e. Facilities Manager or Manager/Supervisor having control over the work activity must issue this permit. This activity is likely to be carried out on customer sites only and therefore the authorised person will be the customer or ADT if they are acting as Principle Contractor under The Construction (Design and Management) Regulations 2007.

5.1 Definition

A confined space is any enclosed space, where there is a reasonably foreseeable specified risk associated with that enclosed space, and includes chambers, tanks, pits, trenches, pipes, sewers, flues, or any other similar space.

5.2 Specified Risk

An 'Entry into a Confined Space Work Permit' must be issued if any of the following risks are present:

- Series injury from fire or explosion
- Increased body temperature resulting in unconsciousness
- Unconsciousness or asphyxiation resulting from exposure to gas, fume, vapour, lack of oxygen; drowning from a rising liquid level.

There may also be other risks that must be considered when issuing a permit to work.

NOTE: Records may be in the form of any type of media such as hard copy or electronic media, where electronic media is used, ensure there is adequate provision for backup and recovery in accordance with the current PC policy (P0030) and Branch Server Backup Schedule (WI0030). Any stated record retention times are minimum retention times only. All records within the required retention period should be EASILY recoverable.

4.4 Causes of Avoidances of Accidents

Accidents are generally caused by one, or more of the following factors:

- Lack of perception of risk by managers/supervisors, often because of lack of necessary training.
- Unsafe, or no system of work devised, e.g., no permit to work system in operation, no facility to lock off machinery and electrics before work starts and until work has finished.
- No co-ordination between workers or communication with other supervisors or managers.
- Lack of perception of risk by workers, including the failure to wear protective clothing or equipment or co-ordination of works.
- Use of maintenance contractors who are inadequately briefed on Health and Safety aspects and not selected on health and safety as well as cost grounds.

The safe operation and maintenance of systems requires steps to be taken to control the causes of accidents. These steps can be divided into the following phases:

Planning
Identification of the need for planned maintenance and arranging a programme for this.

Evaluation
The hazards associated with each maintenance task should be listed and the risks of each considered. The task can then be graded and the appropriate degree of management control applied to each.

Control
The control for each task will take the above factors into account, and will include any necessary review of design, installation, training, and introduction of safe working procedures to minimize risk, i.e. a safe system of work, allocation of supervisory responsibilities and necessary allocation of finances. The review of the activities of Contractors engaged in Maintenance work will also be required to be undertaken.

Monitoring
Random checks, safety audits, inspections and the analysis of any reported accidents for cause, which might trigger a review of procedures, constitute necessary monitoring to ensure the control system is fully up to date. The introduction of any change in the workplace may have implications and should therefore be included in the monitoring process.

4.4.1 Introduction

It is an essential duty of the Employer and/or Building Owner to ensure, that the Health and Safety of the Maintenance Staff and any other people using the premises is protected. This section of the manual is a guide to some of the precautions that require to be considered by both Management and Staff to achieve this.

The equipment and materials referred to in this section should be Used, Operated and Maintained strictly in accordance with the Operating Instructions and/or Manufactures" literature as appropriate.

It is the duty of every member of the Maintenance team to take reasonable care for their own Health and Safety and that of other people, who may be affected by their actions or omissions. It is strongly recommended that at least one copy of the Health and Safety at Work Act {1974} is available on the premises and has been read and understood by all personnel.

Maintenance staff should ensure that they are aware of and understand the rules and regulations which have been formulated and will incorporate safety precautions found to be necessary for works undertaken at Sunbury.

4.4.2 Safe Working Conditions

Work should not be carried out under conditions where there is an element of danger, if it is reasonably practical to eliminate the risk. Safe working conditions should be provided to give protection and safe ingress/egress where necessary. Work on live electrical circuits is not allowed.

Before any works are undertaken a full Risk Assessment and Method Statement must be undertaken, taking into account the impact of these works not only to the operator but also members of staff and the general public depending on the areas of the site that works will take place. It should be noted that as the operations in and around the site are continually changing reviews of the common task with the Risk Assessments/Method Statements must be carried out to keep pace with these changes.

Access to undertake any works will only be considered if accompanied with the necessary Health and Safety statements, on acceptance that this review has been carried a „permit to work" will be issued.

Access doors and panels to all areas containing plant e.g. plant room, electrical panels, fan chambers etc., should be suitably identified and where appropriate carry warning notices.

Adequate ventilation should be provided. Special precautions should be taken where steam, smoke or any other unhealthy or dangerous contaminants are present, particularly in confined spaces.
Lighting must be maintained at a high level in all plant rooms and service areas to enable inspections to be carried out at any time, day or night and to avoid the risk of accident. A high degree of cleanliness, both of rotating machinery and static equipment, is of the utmost importance. Floors and machinery must be protected from split lubricants and all loose materials, containers and papers must not be allowed to accumulate.

Safe areas of works must be maintained and therefore the use of barriers and cones restricting access to others not connected to the maintenance tasks must be in place.

Special access equipment must be in place if working at high level on the Camera or within the confined working spaces within the manhole covers of the external underground duct work system.

This can be summarised by a procedure which can be adopted for each maintenance risk.

Think About the Dangers

Check the task and site for hazards. Decide on the precautions needed.

Prepare

Method Statements and Risk Assessments must be issued.
Permit to Work must be obtained.
Ensure all electrical isolation has been carried out, and securely locked-off.
Put on safety clothing.
Assemble the tools and equipment.
Position DANGER and WARNING notices.
Erect safety barriers.
Position equipment in a safe place.
Check any access equipment for correct and safe operation.

Carry Out Task

Work in a logical sequence.
Use the correct tool for the job.
Never improvise on tools.
Discard defective tools.

Clear Up After Completion of Task

Collect tools and equipment and return to store.
Remove notices or safety barriers.
Tidy up work area.
Sign off permit to work.

4.5 Safety Procedures & Checks

4.5.1 Introduction

The purpose of this list of safety procedures is to provide general safety precautions to be used by persons who own, install, operate, or maintain the systems described within this manual.

This list should not be used to replace instructions that are provided by the equipment manufacturer. Therefore, anyone attempting to work on any equipment should be thoroughly familiar with the specific instructions for that particular unit.

The following is a list of the criteria that have been used here to indicate the intensity of the hazard:

Danger
This means that there is an immediate hazard that will result in severe personal injury or death.

Warning
This means that hazards or unsafe practices could result in severe personal injury or death.

Caution
This means that potential hazards or unsafe could result in minor injury.

Safety Instructions
These are general instructions that are necessary for safe working practices.

4.5.2 Warning and Safety Notices

The “Health and Safety {Safety Signs and Signals} Regulations 1996” make it a legal requirement that all safety signs comply with BS.5378: Part 1, 1980. BS.5378: Part 1, 1980 divides safety signs and notices into four categories, according to the type of “Message”.

Each category has a distinctive colour and shape as summarised below:

A Prohibition Sign
A safety sign, which indicates that certain behaviour, is prohibited. To stop an action. These are recognized by a red circle with a cross bar running top left to bottom right on a white background. The symbols black within the circle. The safety colour red is associated with STOP or DON'T DO.

A Warning Sign
A safety sign, which gives warning of a hazard. This is a black outlined triangle filled in by yellow, the safety colour. The symbol or text is in black. This combination of black and yellow identifies CAUTION.

A Mandatory Sign
A safety sign, which indicates that a specific course of action is to be taken. The safety colour is blue with the symbol or text in white, the shape is circle. This sign indicates an OBLIGATORY ACTION.

The following recommendations should be observed:-

1. At all times warning and safety notices must be maintained and properly displayed and worded to give clear instructions.
2. Notices covering First Aid and Resuscitation from Electric Shock must be displayed in all plant rooms.
3. Proper fire precautions must be observed within the plant rooms and building.
4. All fire fighting equipment must be clearly marked and available for use.
5. Notices must be displayed stating:

"NO SMOKING" or "SMOKING PROHIBITED IN THIS AREA"

Escape Routes

Periodic inspection of all escape routes, fire doors, fire exits, should be made to confirm that doors open freely and routes are always kept clear of obstructions.

Should oil be spilt on bases or floors, the area must be thoroughly cleaned and sanded.

4.5.3 Good Housekeeping

Maintenance work is not always possible under ideal conditions, for example, working above ground or in confined spaces. It is therefore essential that a tidy area, clear of obstructions and loose tools, is kept during the maintenance task.

Checks

a) Is there a place for everything and is everything in its place?
b) Are gangways, aisles, passageways and stairs kept clear and free from substances likely cause a person to slip?
c) Is the lighting satisfactory?
d) Are handrails provided?
e) What is the system for cleaning up spillage of materials or substances?
f) Are all floors and stairs in good repair?
g) Are potentially harmful substances used in your workplace, if so:-
    i) Are they clearly marked with instructions as to how they should be used, stored and disposed of?
    ii) Are the employees trained in their use?
    iii) Is the workplace adequately ventilated?
    iv) What is the system for dealing with emergency, in relation to those substances?

h) Hot, Scalding or Corrosive liquids may be used in the workplace:-
    i) Are the tanks containing these liquids, fenced to a height of 4 metres or securely covered?
    ii) Are any gangways above the tanks provided with adequate guard rails?
    iii) Have all Control of Substances Hazardous to Health {COSHH} requirements been met?

4.6 Risk Assessments

The Following Risk Assessments have been issued during the course of the Contract:

	Title
4.6.1	Benchmark Vaccines Method & Risk Assessment

Intruder & CCTV Works

Method & Risk Assessment No: ALPS : v1

Environmental, Health & Safety Documentation

For installation works at

Benchmark Vaccines Ltd
4 Warner Drive
Springwood Industrial Estate,
Essex, CM7 2YW

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1 - BRIEFING REGISTER:

Names and Signatures of Engineers involved in activity

I confirm I have read and understood this Method Statement

Date MS Read	Name of Engineer	Signature of Engineer

2 – MONITORING AND COMPLIANCE:

Checked By: J.Bixby **Date:** 16th OCT 15

Position Held: Field Line Manager

3 - GENERAL METHOD STATEMENT FOR WORKS TO BE CARRIED OUT

1. ACTIVITIES

To install additional works to the security systems as detailed in our specification

2. PRINCIPAL PERSONS RESPONSIBLE FOR ACTIVITIES

The persons responsible for the installation are:

Jason Bixby 07703338664

3. NATURE OF HAZARDS.

- Fall from Height
- Manual Handling, cable. Equipment, hand tools
- Trip Hazards
- Working with Electricity

4. DURATION OF INSTALLATION:

- Start on site date: 19th OCT 15
- Completion / Handover: TBC

5. MANAGEMENT AND CONTROL OF HAZARDS

5.1 For contracts subject to the Construction (Design and Management) Regulations 2007, operations and controls to be by reference to the Contract (Construction Phase) Health & Safety Plan.

5.2 For other contracts, operations and controls to be undertaken in accordance with documented Company health & safety arrangements, risk assessments, procedures and codes of practice.

6. Safety Arrangements

6.1 All engineers are issued with the necessary personal protective equipment to wear as a minimum:

- Safety Helmet
- Eye Protection (goggles, glasses or over spectacles)
- Gloves cut level 3
- Safety footwear
- Yellow Hi-viz waistcoat

6.2 All ADT site personnel to complete the on line H&S assessment and take their relevant reference numbers with them to the site induction given by Merit Holdings

6.3 All ADT engineers will hold a CSCS card and either a UKATA card or certificate, and have a nominated PASMA approved card holder on site.

7. Working methods

7.1 ADT working times are to be confirmed depending on activity.

7.2 Resources to be used

- 12-24V Battery Drill
- 12-24V Battery Screwdriver
- Calibrated test meters
- Hand tools, (screwdrivers, cable cutters, Hacksaws, hammer etc)
- Mobile Tower
- Steps

7.3 Location of work

In all areas of the bank, customer side and secure area and external

7.4 Details of Work to be completed .

I. ADT to 1st fix Security detection, all cabling to be above ceiling height on cable tray supplied and installed by Merit Holdings, cables to be secured by cable ties. The use of a podium or MEWP to be used for access unless in a confined area and a step permit issued. The minimum PPE will be worn as detailed in 6.1. This will continue until all cables are in final positions.

II. The positioning of the Security detection is determined as per the drawing ADT issued to the Client, all deviations must be agreed by the Client before being completed, costs incurred will be submitted to the client and the works will only progress once agreed by the client.

III. Primary and Secondary containment is fitted by Merit Holdings to the locations ADT require, cabling then will be installed to each detector or camera.

IV. 2nd fixing of the security systems will involve the use of either mobile towers, mewps or step ladders and hand tools as detailed in 7.2 and secured to manufacturers recommendations...

V. The installation control units / Power supplies will be via a 240volt ac un-switched fused outlet installed by Merit Holding's nominated contractor, ADT will then connect their equipment to the load side of the outlet.

VI. Any power supplies for the intruder system will contain a 12vdc battery to take over in the event of a power interruption.

VII. Demonstrating the security systems will be done once all works are completed and to the Client, documentation of the training will be logged on file at ADT.

VIII. ADT to attend handover

8 Site Storage & Deliveries

8.1 Deliveries will be made by UPS delivery service within trading hours, items required on a daily basis will be delivered to a storage unit and brought to site by the engineers.

8.2 Storing of the equipment will be on site in a room or area agreed with Merit Holdings and kept in a clean and tidy state.

4 - SAFETY WORKING PRACTICES:

9 GENERAL Rules

9.1 Site access and egress will be via designated routes defined / advised by Merit Holdings during the initial site induction and as displayed on site notice boards. Access using unauthorised access routes is not allowed ADT Operatives will sign in and out daily at the main site entrance or as directed in the site Induction.

9.2 All ADT operatives whilst on site will notify the appointed site manager if it is noted other trades are working unsafely.

9.3 Emergency evacuation procedures will be as advised by Merit Holdings during site safety inductions. Temporary fire fighting appliances are as advised by Merit Holdings and indicated on site notice boards. ADT will not be using these and will inform the site manager if a fire has occurred and congregate at the Muster point indentified in the Site induction.

10 First aid

10.1 Engineering staff who visit site will be supplied with a basic personal First Aid Kit, containing only those items specified in the Regulations and Approved Code of Practice, if used the engineer is to contact his FLM to replenish the item. ADT will use the First Aid facilities provided by Merit Holdings and report any accident in reference with Safety at Work Practice No 18. Engineer to report any accidents to ADT for investigation and logging purposes.

11 Electricity

11.1 Where electrical tools are required on site they will be battery powered. Each will have a PAT tested sticker and documentation held at ADT to prove this has been carried out within the last 6 months.

11.2 A lock off kit is provided to ensure when connecting 230v supply to panels the mains is safely isolated as per the electricity @ work regs 1989

11.3 Normally there should be no “live working” unless this is unavoidable and by risk assessment/ permit to work is acceptable issued by Merit Holdings.

12 Tools

12.1 Our personnel have a responsibility for the care and correct use of their tools, either Company supplied or personally owned.

12.2 Damaged tools will not be used under any circumstances. Damaged ADT supplied tools will be brought to the attention of Management, and replacements obtained. Damaged personally owned tools or equipment will be replaced immediately

13 WORKING AT HEIGHT – Mobile Tower or equivalent, Steps

13.1 ADT will supply a Mobile Tower for works, this will be used by a competent PASMA approved operator, the mobile tower will have a “Scaf” tag fitted and signed by the engineer. When using a Tower, Toe boards will be fitted to stop the fall of tools and equipment from the platform.

13.2 When the use of steps is required (working in an area which a tower cannot fit or will block routes) a permit must be obtained from the site manager prior to use. All ADT step ladders have on show a Ladder Tag and are inspected every 6 months, these records are kept at ADT.

13.3 ADT will supply a MEWP for any works at height. This will be used by a competent IPAF approved operator at all times.

14 PPE

14.1 Person required to work on the site will wear head protection (hard hat) complying with EN397

14.2 Eye protection is to be worn at all times on site, where there is a risk to eyes from flying objects, splashes from substances or any other similar hazardous working conditions including drilling, eye protection to EN166 must be worn Damaged eye protection must not be used and reported to ADT.

14.3 Safety shoes/boots/trainers will be worn at all times. These must comply with EN 345 and soles must have inner protection

15.4 Hi - Viz clothing will be worn at all times. This should conform to EN471 as a minimum) and should have the company name / logo on it

14.5 Gloves are to be worn at all times and will be a minimum of a cut level 3

14.6 Face fit masks are to be used in dust areas, this must be PP3 and be face fit test certified.

15 Environmental Issues

15.1 ADT Fire and Security are to clear away all their debris and waste to the agreed bin located on onsite as directed in the site induction. If designinated recycle bins are to be used then ADT will use them correctly and filter waste, if no on site bins the ADT will remove the waste and dispose correctly at their stores or PUDO boxes.

16 Accident & Near Miss Reporting

16,1 All near miss reporting will be controlled and documented in accordance to ADT policy. This will also be given to Merit Holdings as a reference any accidents will be documented in the site accident book and investigated by ADT project manager and by Merit Holdings. Any further action will be conducted by ADT and training given.

17. COSHH

17.1 Any materials or substances subject to management under the COSHH regulations will be listed following on from this.

ADT Always There

tyco	COSHH ASSESSMENT H/E 4.3.1 Q 7.2.1(c) PAS 99 4.3.1	HSF 7.2 Issue 0 March 2012

ASSESSMENT TITLE	LEAD ACID BATTERIES			Ref No:	CoSHH-gen-23
Process	HANDLING ANDE USE OF LEAD ACID BATTERIES			Assessed Date:	21/10/2014
Location	TYCO LOCATIONS AND CLIENT SITES	Area	VARIOUS	Valid Until:	OCT 2016
People affected	TYCO PERSONNEL AND OTHERS IN VICINITY			Assessed By:	M MATHER

SUBSTANCE INFORMATION

Product Name (code)	Manufacturer	Hazard Symbols
ROLLS LEAD ACID STORAGE BATTERY	SURRETTE BATTERY CO. LTD P.O. BOX 2020, 1 STATION ROAD SPRINGHILL, N.S. B0M 1X0 CANADA Tel: +01 (0)613 996-6666	
ELECTRIC STORAGE BATTERY	YUASA BATTERY INC. 2901 MONTROSE AVENUE LAURELDALE, PA 19605 USA Tel: +01 (0)	
LEAD ACID BATTERY	POWER-SONIC EUROPE LTD 3 BUCKINGHAM SQUARE , HURRICANE WAY, WICKFORD , ESSEX ,SS11 8YQ Tel: +44 (0)1268 560686	

Amount Used	How many times per day	Duration	Workplace Exposure Limits		
			Name	STEL	TWA
Small (Millilitres)	1-5	1 -5 minutes	LEAD	50 µg/m3	-
			SULPHURIC ACID	1000 µg/m3	-

	Please Tick			
Can a less hazardous substance be used to do the same job?	YES		NO	✓
Can a more environmental friendly product be used to do the same job?	YES		NO	✓
Is this substance being used with another substance?	YES		NO	✓
Do the operatives exposed to the substance require Health surveillance?	YES		NO	✓

TASK	CONTROL MEASURES
WORKING WITH LEAD-ACID BATTERIES.	WELL VENTILATED AREAS. ACID RESISTANT PPE (GLOVES, GOGGLES, APRON) HANDS WASHED AFTER USE AND BEFORE EATING, DRINKING OR SMOKING CONTAMINATED CLOTHING REMOVED AND THOROUGHLY CLEANED BEFORE RE-USE. SAFETY DATA SHEETS ATTACED.

HAZARD TO HEALTH IDENTIFICATION & EMERGENCY ACTION

Route of Exposure	Exposure Affects	Emergency Action
INHALATION	**ELECTROLYTE**: BREATHING OF SULFURIC ACID VAPORS OR MISTS MAY CAUSE SEVERE RESPIRATORY IRRITATION. **LEAD**: INHALATION OF LEAD DUST OR FUMES MAY CAUSE IRRITATION OF UPPER RESPIRATORY TRACT AND LUNGS.	**ELECTROLYTE** - REMOVE TO FRESH AIR, SEEK MEDICAL ATTENTION IF SYMPTOMS PERSIST **LEAD** - REMOVE FROM EXPOSURE GARGLE, WASH NOSE AND LIPS, SEEK MEDICAL ADVICE
SKIN	**ELECTROLYTE**: SEVERE IRRITATION, BURNS, AND ULCERATION. SULFURIC ACID IS NOT READILY ABSORBED THROUGH THE SKIN AND IS NOT A DERMAL SENSITIZER.	**ELECTROLYTE** - FLUSH COPIOUSLY WITH WATER FOR AT LEAST 15 MINS **LEAD** - WASH THOROUGHLY WITH SOAP AND WATER
EYES	**ELECTROLYTE**: SEVERE IRRITATION, BURNS, CORNEA DAMAGE, BLINDNESS. **LEAD**: MAY CAUSE EYE IRRITATION.	**ELECTROLYTE/LEAD** - IRRIGATE EYES COPIOUSLY WITH WATER FOR AT LEAST 15 MINS, SEEK MEDICAL ADVICE
INJECTION	NOT CONSIDERED A LIKELY ROUTE OF EXPOSURE	N/A
INGESTION	**ELECTROLYTE**: MAY CAUSE SEVERE IRRITATION OF MOUTH, THROAT, OESOPHAGUS, AND STOMACH. **LEAD**: INGESTION MAY CAUSE ABDOMINAL PAIN, NAUSEA, VOMITING, DIARRHOEA, AND SEVERE CRAMPING. THIS MAY LEAD RAPIDLY TO SYSTEMIC TOXICITY.	**ELECTROLYTE** - DRINK PLENTY OF WATER, DO NOT INDUCE VOMITING, SEEK MEDICAL ADVICE **LEAD** - SEEK MEDICAL ADVICE

OTHER PRECAUTIONS

Spillages	SPILLS TO BE ABSORBED USING INERT ABSORBENT MATERIAL AND ACID RESIDUE TO BE NEUTRALISED WITH SODA ASH, SODIUM BICARBONATE, LIME, ETC
Fire	EXTINGUISHER: DRY CHEMICAL, FOAM, CO_2. **NOTE:** DO NOT USE CO_2 EXTINGUISHERS DIRECTLY ON CELLS.
Storage	STORE IN A COOL, DRY, WELL-VENTILATED PLACE
Disposal	DISPOSE OF IN ACCORDANCE WITH LOCAL AUTHORITY REQUIREMENTS

PERSONNEL PROTECTIVE EQUIPMENT: ✓ as required (state type required)

	Eye Protection GOGGLES	✓		Overall/clothing STANDARD ISSUE	✓		Gloves	✓
	Mask/respirator	✓		Safety Shoes STANDARD ISSUE	✓		Other APRON	✓

ASSESSMENT OF RISK

Hazards to health adequately controlled with all control measures in place.	YES	✓	NO	
Remedial Actions if any:				
Overall Assessment Risk:	Low	Assessors Signature:	M Mather	

RISK ASSESMENT:

RISK MATRIX									
CONSEQUENCE – People	**CONSEQUENCE – Plant/Assets**	**RISK MATRIX**						**LIKELIHOOD X CONSEQUENCE = RISK RATING**	
Fatality	Catastrophic	6	12	18	24	30	36	**15 - 36 High Risk**	Unacceptable stop activity and make immediate improvements
Major	Major Damage	5	10	15	20	25	30		
Serious	Severe Damage	4	8	12	16	20	24	**8 - 14 Medium Risk**	Improvements are required to reduce the risks to an "Acceptable" level before work can commence
Significant	Moderate	3	6	9	12	15	18		
Low Severity	Low Severity Damage	2	4	6	8	10	12	**1 - 7 Low Risk**	Acceptable no further action, but ensure controls are implemented and maintained
Insignificant	Negligible	1	2	3	4	5	6		
LIKELIHOOD (PROBABILITY)		Very Unlikely	Unlikely	Fairly Likely	Likely	Very Likely	Highly Likely		

HAZARD	1	2	3	4	5	6	7	8
	Factors of Harm		Risk	**RISK ASSESSMENT MATRIX**	Likelihood	Severity	Residual risk	Control measures implemented by:
	Likelihood	Severity	Multiple of columns 1 × 2	CONTROL MEASURES			Multiple of columns 5 × 6	
Use of mobile scaffold tower/podium steps - fall of a person from height	2	6	12	1)Ensure mobile towers are erected/assembled only by trained and competent persons 2)Inspect scaffolding before use 3)Guard rails and toe boards are installed 4) Ladders are fixed internally to the scaffold with access flap preferred 5)Operatives to be instructed in safe use of towers 6) Hire only from approved plant hire suppliers	1	6	6	site supervisor
Use of mobile scaffold tower/podium steps– fall of objects from height	4	3	12	1)When working in public, retail or other occupied areas the area under and around the base of the platform must be suitably signed and taped/ barbered off 2)Operatives to wear all necessary PPE 3)Any resulting unwanted materials to be cleaned up and removed from tower as work progresses 4) Toe boards to be installed 5) Tools and equipment to be bagged on and off scaffolding 6)Avoid leaning and reaching out of the scaffolding when working	1	3	3	site supervisor
Use of mobile scaffold tower/podium steps – Tower overturning due to incorrect equipment use or human error	3	6	18	1)Do not exceed a working height to smallest base dimension ratio of 3.5 to 1. 2)Use stabilisers where this ratio is exceeded or manufacturer recommends their use. 3)Mobile scaffolds should not be moved under any circumstances whilst persons are working on the platform	1	6	6	site supervisor
Use of a mobile scaffold/podium steps – Overloading of working platform causing equipment failure/collapse	2	5	10	1)Do not exceed working height to smallest base ratio of 3.5 to 1 2)Use stabilisers where ratio is exceeded or manufacturer recommends their use. 3)Do not exceed limitation on persons using the tower 4) Prolonged storage on platforms should not be permitted	1	3	3	site supervisor

Use of small plant/power tools – causing severing or incision cuts from sharp blades, parts or materials, hair or clothing becoming entangled in exposed moving parts, eye injuries from dust, swarf or other fragments, wrist or hand injuries due to tool jamming or binding, vibration	3	4	12	1) Loose clothing and long hair to be kept clear of all power tools 2)Use only correct tools for the job to be undertaken 3)Eye protection to be worn at all times if there is a foreseeable risk of injury 4)All tools to be sharp, fit for purpose and all moving parts operating properly, with no loose handles or blunt edges 5)Gloves or padding to be used with impact tools 6)Gloves may be appropriate for use in cold weather conditions. Never exceed the stated ELV (Exposure limit value).	1	4	4	site supervisor
Use of small plant/power tools – Electrical shock	2	6	12	1)Electrical power tools to have valid current inspection certificates 2)Flexible leads/plugs fuses to be correctly rated and maintained in sound condition 3)All tools to be tagged and a register of inspections maintained 4) Portable tools to be 18v rechargeable battery operated type 5)Any electrical plant run from mains supply to be RCD protected	1	6	6	site supervisor
Use of trailing leads, keeping tools, equipment or materials on site – Electrical shock	2	5	10	1)Flexible leads / plugs / fuses to be correctly rated and maintained and in sound condition 2)All tools to be tagged and register of inspections maintained 3)Portable tools to be 110v or rechargeable battery operated type 4) Any electrical plant run from 240 volt mains supply to be RCD protected	1	5	5	site supervisor
Carrying equipment on site and up/down stair cases – Manual handling	4	4	16	1)Access only the equipment/documentation/materials required as per any method statements and/or safe systems of work. Wherever appropriate permit conditions are rigidly observed 2)Wherever possible reduce the amount needed to be carried. Non essentials should remain in storage until required 3) Assess the weight of the load without picking it up, there may be weight labels attached. If the load is more than one person can safely handle, then assistance must be obtained. If this is not possible you must advise your Line Manager. 4) Loose and small items should be double bagged, equipment should not be stored in a way that it could fall easily	1	4	4	site supervisor

Cabling and Equipment in ceiling voids – falls of object from height	3	4	12	1)Tiles, if removed during work, should be safety stored or removed to ground level 2)When working in public, retail or other occupied areas, the area under and around the foot of ladders, or access plant is to be suitably signed and/or taped off, or barriers used 3)Suitable portable overhead working signs, or caution signs are to be used as appropriate 4)All equipment, particularly power supply units and similar heavy equipment to be bracketed to structural supports 5)No equipment or material is to be left supported solely by ceiling tiles	1	4	4	site supervisor
Cabling and Equipment in ceiling voids – fall of person from height	3	6	18	1)Where possible a cherry picker or similar free standing access plant will be required 2)Only trained, experienced and competent engineers to use working platform 3)Fall arrest harnesses are to be used whenever appropriate 4)Whilst working inside false ceilings using purpose made walkways, all installed plant must remain accessible from the walkway and engineers shall not for any reason leave the walkway 5)Tiles removed during work should be safety stored or removed to ground level	1	5	5	site supervisor
Cabling and Equipment in ceiling or floor voids – Electrical Shock	2	6	12	1) No 'live' electrical working is to be knowingly undertaken within ceiling/floor voids 2)Care is to be taken where other circuits, (e.g. lighting) are run within the ceiling/floor void, which may be live whilst our installation or servicing work is being undertaken 3)If, and wherever practical, other circuits should be isolated 4)Adequate portable lighting is to be made available within all unlit voids.	1	4	4	site supervisor
Cable Pulling – Manual handling/slips trips/cuts and abrasions	3	4	12	1) For heavy or major works a Pre-start survey is essential to check route, manpower and equipment requirements 2)Personnel protective equipment will be provided as required by assessments but as a minimum that shall include, riggers' gloves, safety footwear and head protection 3)Cable drums revolving on a spindle always require a dedicated brakeman during pulling operations 4)Operatives shall be trained in manual handling techniques and instructed in the safe use of any necessary specialist tools or equipment. (Lifting and tensioning devices, as appropriate).	2	3	6	site supervisor

Drilling, Fixing where buried electrical hazard may exist	3	6	18	1)Isolation of any known circuits. Double check circuits, code numbers, tags and any other forms of information available. 2)Use detection equipment to trace hidden cables 3)Operate permit to work system 4)Use double insulated or battery operated tools only 5) engineer to use lock off kit	1	5	5	site supervisor
Customers staff safety – keeping staff away from the work area to prevent the likelihood of injury or harm	3	3	9	Never work above other people. Segregate the work area by the use of pedestals and hazard barriers. Speak to the customer and ask for co-operation with regards to keeping their staff out of the working area. If for whatever reason this cannot be achieved stop work and report to your supervisor	1	3	3	site supervisor
Use of Stepladders – fall from height	2	6	12	1. Only use steps to BS 2037 (Class1) (aluminium) or BS EN131 (aluminium & glass fibre) or equivalent. 2. There should be an adequate handhold and the user's knees should remain below the level of the top tread of the stepladder unless an extended handrail and work platform is provided. 3. Stepladders should only be used on firm even ground in a fully open position where applicable with the stays locked. 4. Where the work requires pressure to be applied, steps should be pitched at 90 degrees to the work surface.	1	6	6	site supervisor
Use of Stepladders – Dropping tools or equipment, whilst working from stepladders.	4	3	12	1.When working in public, retail or other occupied areas, the area under and around the foot of the stepladder is to be suitably signed and/or taped off, or barriers used. 2. Tools and equipment should not be left where it may fall from the top of stepladders.	1	3	3	site supervisor
Use of Stepladders – Manual handling of stepladders (a) removal from vehicles, (b) carrying and (c) moving around sites.	3	3	9	1. Stepladders are to be handled following good manual handling practice. They are to be carried in a balanced and stable manner. 2. When working in public or in occupied areas, caution must be used to ensure people are not struck by stepladders whilst being moved, nor should stepladders be left unattended where people may trip over or walk into them.	1	3	3	site supervisor

Slips, trips and falls – slipping or tripping on the level	3	2	4	1. Safety shoes/trainers to be worn at all times, it is important to make sure your shoes still have a good grip and soles are not worn out. 2. Be observant when walking around look out for “wet patches”, liquids or oils etc. 3. Never run in the work areas. 4. Be wary of change in type of floor surface. 5. Look out for worn out or damaged floor surface. 6. If you spill anything clear it up. 7 Good housekeeping – keep your work area tidy at all times.	1	2	2	site supervisor

4.7 Service Call Information

Contract Number	Discipline
1000609300	Fire Alarm System
1000759218	Intruder Alarm System

TO CALL OUT AN ENGINEER (SERVICE BUREAU)

OR

FOR MONITORING ENQUIRIES (MONITORING STATION)

CALL ☎ 0344 800 1999 and follow the necessary instructions.

It should be noted that this is a 24Hour Service.

When contacting the above number please ensure you have the relevant Contract Numbers to hand to ensure the appropriate Engineer is dispatched.

4.8 Emergency Contact Details

	Organisation Name & Address
Water	
Gas	
Electric	
Local Police	

