



Department
for Communities
& Local Government



Fire and Rescue Service Operational Guidance

GRAs
generic risk assessments

GRA 2.3

Rescues from lifts
and escalators

Generic Risk Assessment 2.3

Rescues from lifts and escalators

November 2012



Published by TSO (The Stationery Office) and available from:

Online

www.tsoshop.co.uk

Mail, Telephone, Fax & E-mail

TSO

PO Box 29, Norwich, NR3 1GN

Telephone orders/General enquiries: 0870 600 5522

Fax orders: 0870 600 5533

E-mail: customer.services@tso.co.uk

Textphone: 0870 240 3701

TSO@Blackwell and other Accredited Agents

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ISBN 9780117540255

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Printed in the United Kingdom by The Stationery Office

J002515250 C2 11/12 23536 19585

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Rescues from lifts and escalators

SECTION 1

Generic risk assessment 2.3

Rescues from lifts and escalators

Scope

This generic risk assessment examines the hazards, risks and control measures relating to Fire and Rescue Service personnel, the personnel of other agencies and members of the public when attending special service incidents involving lifts, escalators and moving walkways.

This generic risk assessment covers lifts, escalators and moving walkways that are permanent features of a building following its construction and those that are temporarily fitted during the construction phase.

These lifts, escalators and moving walkways can be described as:

“a method of conveyance for passengers or equipment between different levels or points within a building.”

As a moving walkway is in effect a horizontal escalator, any reference to an escalator in this generic risk assessment also applies to moving walkways.

This generic risk assessment does not deal with mobile elevated work platforms, which are commonly known as ‘cherry pickers’.

Depending on the nature and scale of an incident a variety of significant hazards may be present. Fire and Rescue Services may therefore need to consider the contents of other specific generic risk assessments in this series including:

- 1.1 Emergency response and arrival at the scene
- 2.1 Rescues from confined spaces
- 2.6 Rescues – of trapped persons (machinery)
- 5.1 Generic hazards – Incidents involving electricity
- 5.10 Working at height.

It is important to remember that when assessing the risks associated with lifts and escalators, temporary lifts such as those on construction sites, whilst used for the transportation of people and equipment may not meet the same standards as permanent lifts.

Fire and Rescue Services should use this guidance to conduct their own risk assessments and use these to produce their own safe systems of work. This will include standard operating procedures, training programmes, provision of equipment and levels of response and should be undertaken within the context of integrated risk management plans, local conditions, knowledge and existing organisational arrangements.

Significant hazards and risks

The significant risks and hazards associated with lifts and escalators are:

Ineffective incident communications

Incidents involving lifts and escalators will normally have two sites of operation: a machine room that may be in a remote location within the building and an incident scene, where people will require rescue or release.

Poor communication can lead to machinery being moved at the wrong time or in the wrong direction leading to injuries to either the person(s) waiting to be rescued or the personnel performing the rescue.

Gaining access to machine rooms and shafts

The machine or control room for lifts are often situated in remote parts of the premises and under normal circumstances should be locked and secured. For lifts, these rooms can be either at the top or bottom of the building and for escalators and moving walkways at the top of the escalator or walkways, in a panel at the side.

In the case of escalators, machine rooms will normally be at the top of the escalator either under a floor trap (for small escalators, such as those in shops) or, in larger premises (such as those used in transport systems) a separate room will be used. On railway premises such as London Underground, access is usually available at both the top and the bottom of the escalator.

Personnel requiring access to machine rooms will generally have to either ascend or descend stairs. They may also have to climb unprotected vertical ladders and pass through access panels. There is a risk of collision with fixed objects whilst moving around machine rooms. All these activities carry the risk of musculoskeletal injuries, slips, trips, and falls.

Access to machine rooms may also necessitate moving through trapdoors and hatches, this may require the implementation of additional measures to prevent their unexpected closure and the maintenance of safe access and egress.

There is also a risk of falling from height when ascending or descending unprotected vertical ladders or when working near or inside an open lift shaft. Some machine rooms may require personnel to cross roofs that do not have edge protection, thereby increasing the likelihood of falls from height.

Machine room doors will normally be secured shut and they should only be forced open when keys are not available and access is required to meet the Incident Commander's objective.

In the case of space saver lifts – known as a machine room less lift – the control functions do not have a designated machine room but will typically be found adjacent to one of the lift doors. The hand winding mechanism is intentionally made difficult to access and in some instances may not exist at all. Where hand-winding facilities are not provided there will be an alternative provision to move the lift in an emergency. These facilities may be fixed in various positions on one of the lift landings. They may also be found on the top, the bottom of the lift car, or on the inside wall of the shaft. Entry into the lift shaft is not normally required to access manual release systems, other than on some construction site hoists.

Before entry into any restricted or shaft space is made, personnel must recognise and fully assess the risks and hazards associated with this activity as the risk can range from minor cuts and abrasions to being trapped or fatally injured by moving machinery or falling down lift shaft.

The risk associated with gaining access to a machine room may be increased by a lack of lighting and, in some premises with older machinery, the presence of battery acid.

If there is more than one lift or escalator in use, personnel should be aware of the proximity of other moving parts of the equipment. It is important that the correct equipment is identified so that the corresponding machinery and power systems can be isolated.

NOTE 1

It is accepted that some Fire and Rescue Services may refer to 'motor rooms', but for the purpose of this generic risk assessment, all references will be to 'machine rooms'.

Machinery

All machinery forming part of these systems present hazards and risks to personnel, which may include:

- machinery power source(s)
- noise from machinery
- entrapment of body parts or clothing in moving machinery
- being struck by moving machinery or displaced machinery parts or debris
- contact with sharp or abrasive machinery surfaces
- shear trap created by the movement of the lift car or counterweight within the lift shaft
- uncontrolled movement of the machinery due to the release of stored energy.

There is also the possibility that machinery may have had its safety features isolated, removed or damaged as part of equipment maintenance or as a result of vandalism. It may also be necessary for personnel to isolate or remove such features to perform a rescue where there is an immediate risk to life.

If there is more than one lift or escalator in the machine room and only one lift or escalator is required to be isolated, personnel must be briefed that there will be other machinery that will remain in operation. The Incident Commander should consider isolating all machinery on occasions when leaving it in operation would create an unacceptable level of risk.

Personnel should recognise the additional risks involved when a safety feature has been disengaged. The Incident Commander must implement additional control measures to deal with identified hazards, which may range from trips and slips to fatal injury resulting from contact with moving machinery or the electrical supply.

The manual movement – often referred to as ‘hand winding operations’ – of a lift or an escalator will generally require some or all of the safety devices to be disengaged. During these operations, the risk of injury ranges from a minor sprain or strain if a task is performed incorrectly, to a fatal injury, where personnel come into physical contact with moving machinery.

When the power is isolated and the hand winding operation is in progress, personnel working in the vicinity should be briefed to expect machinery movement without the warning of machine noise and subsequently remain at a safe distance from the machinery.

Fire and Rescue Services may encounter incidents where the lift car is being held by the safety devices against the lift’s guide rails contained within the lift shaft. Whilst the lift may be held in a stable position, this situation may lead to the cables or wire rope holding the lift becoming slack.

This may entangle personnel working within the shaft and may lead to an unexpected and rapid decent/ascent of the lift car and/or its counterweight.

If ‘slack’ cables are observed, this may indicate that the lift is being held by the safety devices or that the lift car has come off its guide rails. Fire and Rescue Service personnel should not increase the loading on the lift car by working on it, this has the potential to overload the safety factors of these devices, or to move the lift car, which may result in it dropping until the slack in the cables is taken up.

Power systems and hydraulic fluids

Personnel should be aware that the risk from electrocution or electric shock will be present until all electrical power supplies have been isolated.

Most lifts and all escalators will have two separate electrical sources within the machine room, namely:

- 230 volt electrical supply for the lighting and any power sockets fitted
- 415 volt electrical supply for the machinery that drives the lift or escalator.

It should be remembered that there may be more than one power source contained within a machine room. These sometimes include battery powered standby and emergency lighting systems. Some premises may also have emergency generators that activate automatically in the event of the interruption of the power supply.

In the case of hydraulic lifts, some types can be raised by use of the control panel. In this instance, the electricity supply will need to remain live and it will not be possible to eliminate the risk of electric shock or electrocution during operations.

Hydraulic lifts are typically fitted with a hand pump to raise the lift and a valve marked with a red button to lower it. These facilities are not operated by a power supply but personnel should be aware of the possibility of leakage of hydraulic fluids from rams, hoses and reservoirs. This may create the risk of a severe injury from epidermal injection when the system is under pressure.

Machinery may move slowly downwards after personnel have isolated the power supply. It should also be remembered that fluid in the hydraulic systems may leak or let by and this has the same effect on machinery movement. In both cases, this creates a risk of a crush injury.

Leaking hydraulic fluid can cause slippery surfaces, leading to slips trips and falls. Contact with this fluid can also lead to skin irritation and skin disorders. Some fluids may be carcinogenic.

NOTE 1

Turning off an isolator marked 'lift' in the building's electrical switch room will not normally isolate all supplies to the lift. This is achieved by isolating supplies from the lift machine room or, in the case with a machine roomless lift, by isolating the supply in the panel located on one of the landings.

NOTE 2

If the hydraulic pressure gauge is registering zero but the lift is not located at its lowest level, then the lift car, guide rails or other parts of the lift structure could be damaged and/or be in a dangerous position and may be preventing the movement of the lift.

NOTE 3

The lift or escalator should not be reinstated by Fire Service personnel. The duty of care should be left with the owner/occupier or a lift engineer.

Working in restricted areas

Lift and escalator incidents may involve or create working environments where there is minimal headroom and space to manoeuvre.

Any available space may be further restricted by the use of fire service equipment or items of machinery that have been left on the floor during maintenance operations, etc.

Manual handling

There will be occasions when manual handling issues arise, including:

- releasing and handling of people trapped in the machinery
- hand-winding the lift or escalator
- working within a restricted space
- moving, handling or using fire service equipment required to deal with incidents
- the presence of debris or equipment.

Manual handling may also result in personnel coming into contact with moving parts of machinery or sharp edges. This may lead to a range of injuries including musculoskeletal injuries, cuts and even fatalities.

Lubricants

There is a high likelihood that supplies of lubricants (which can be oil or grease) will be found in machine rooms.

Lubricant containers may create trip hazards and, if spilled, lubricant will create hazardous surfaces in and around machinery. Lubricants can also have properties that can have detrimental short and long-term health effects. Some lubricants are carcinogenic and others cause an allergic reaction if they come into contact with skin.

NOTE 1

It is important that fire service oxygen equipment, such as resuscitators, does not come into contact with oil and grease based lubricants, because pure oxygen creates the risk for spontaneous combustion.

NOTE 2

When oil and grease is used on machinery it can also attract dust and debris. This may create a fire risk, as seen during the Kings Cross Underground station incident in 1987.

Limited or lack of familiarity with the lift or escalator

Many Fire and Rescue Services are actively engaged in looking at ways to reduce the number of special service incidents, especially calls to 'persons shut in lift'. This means that operational personnel's day-to-day experience of dealing with incidents involving lifts and escalators will diminish.

Any reduction in the number of these incidents may also result in Fire and Rescue Service personnel not gaining practical experience in relation to new technological improvements to lifts and escalators.

All these factors can increase the risk of injury to personnel, if they attempt to use incorrect or inappropriate equipment and/or procedures.

Distressed or aggressive members of the public

Personnel should be aware that the public may have a strong emotional reaction when they are either directly involved in or are witness to lift and escalator incidents.

The context for this reaction includes a range of situations, in which members of the public:

- are physically trapped by the machinery
- see other people trapped by the machinery
- are confined within lift cars against their will
- become frustrated by their perception of Fire and Rescue Service actions or inaction
- are released from the machinery or the lift car
- see or hear unfamiliar equipment used by the Fire and Rescue Service
- are trying to extricate themselves.

Behaviour of members of the public involved in such incidents may become unpredictable, irrational and/or violent. This can lead to Fire and Rescue Service personnel being exposed to the risk of injuries associated with panic, stress or deliberate acts of aggression or violence.

All of the above may be exacerbated if the people involved are under the influence of alcohol, drugs or have certain medical conditions.

Unauthorised access by members of the public to machine rooms

Members of the public may make unauthorised access to machine rooms for various reasons, including illegal pirate radio stations or the manufacture and distribution of illegal drugs.

Personnel should be aware that this leads to the possibility of a range of additional hazards in machine rooms, such as:

- hypodermic needles and other contaminated drug related items

- human and animal excrement
- verbal or physical attacks on firefighters, in extreme cases by persons armed with weapons
- electrical supplies that have been interfered with or bypassed
- the presence of unexpected and possibly hazardous electrical equipment
- ‘booby traps’ such as razor blades fixed to door handles
- large quantities of debris
- presence of animals
- the storage of illegal and illicit goods.

Stored energy within the lift/escalator

Once the power to a lift/escalator has been isolated and the braking system is active, the stored energy will be controlled.

To enable manual hand winding of the machinery, the braking system must be disengaged. Once this has been done, the stored energy within the system is released and this creates the potential for a rapid uncontrolled movement of the machinery.

Hazardous materials

At all phases of operations there is a potential for contamination from a range of hazardous materials such as:

- bodily fluids from both Fire and Rescue Service personnel and members of the public who require rescuing
- human and animal excrement within lift cars and machine rooms
- drug taking equipment within machine rooms
- pest control substances and associated trapping devices
- hydraulic fluids and lubricants.

The effects of these materials can range from short-term illness and conditions such as rashes to long-term conditions such as hepatitis and HIV.

Key control measures

Planning

Planning is key to enhancing the safety of firefighters and others likely to be affected by Fire and Rescue Service’ operations. Each Fire and Rescue Service’s integrated risk management plan will set standards and identify the resources required to ensure safe systems of work are maintained.

Each Fire and Rescue Service should assess the hazards and risks in their area relating to this generic risk assessment. The assessment should include other Fire and Rescue Services' areas where 'cross border' arrangements make this appropriate.

Site-specific plans should be considered for locations where the hazards and risks are significant and plans should take into account and specify any variation from the normal operational capability of personnel, appliances and equipment. In particular, recognition should be given to the physical and psychological pressures that an operational incident may apply to Fire and Rescue Service personnel.

Site specific plans should include:

- levels of response
- relevant standard operating procedures
- tactical considerations, including rendezvous points, appliance marshalling areas and access points
- identification and where necessary, the formal notification to person(s) responsible for the site of any Fire and Rescue Service operational limitations.

Planning is underpinned by information gathering, much of which will be gained through inspections or visits by Fire and Rescue Service personnel – for example, those covered by section 7(2)d and 9(3)d of the *Fire and Rescue Services Act 2004*.

Information should also be gathered and used to review safe systems of work from sources both within and outside the Fire and Rescue Service, including:

- fire safety audits
- incident de-briefs
- health and safety events
- local authorities
- local resilience fora.

Involving others in planning is an effective way to build good working relations with partner agencies and other interested parties, such as site owners.

Fire and Rescue Services should ensure systems are in place to record and regularly review risk information and that new risks are identified and recorded as soon as practicable.

Fire and Rescue Services must ensure that the information gathered is treated as confidential, unless disclosure is made in the course of duty or is required for legal reasons.

Fire and Rescue Services should consider the benefits of using consistent systems and formats to record information from all sources. Consideration should also be given to how timely access will be provided to information to support operational decision-making.

Information needs will vary in proportion to the size and nature of the incident. The capacity of Fire and Rescue Service personnel to assimilate information will vary in relation to the complexity of the incident. Therefore, arrangements may need to be flexible and be based on more than one system.

Further guidance on planning can be found in the **Fire and Rescue Operational guidance – Operational risk information** and any other relevant sources.

<http://www.communities.gov.uk/documents/fire/pdf/2124406.pdf>

Planning should commence between the Fire and Rescue Service, construction companies, and site owners as early as possible, ideally at the design or planning application stage. This will help to promote safe working environments as these systems are being installed in premises.

Specific planning regarding this generic risk assessment subject should include site visits to assist personnel to recognise and gain knowledge of:

- different types and design of lifts and escalators
- access arrangements
- height and number of floors in premises
- safety features of the machinery
- location and access to motor rooms and control systems
- availability and contact details of any on-site engineers with specialist knowledge
- availability and location of equipment operating instructions
- firefighter self rescue equipment provision as per BS EN 81-72:2003.

Planning, along with risk assessments and any relevant guidance, should be the basis for the development of standard operating procedures and the provision of suitable equipment.

Competence and training

When formulating a competence and training strategy, Fire and Rescue Services should consider the following points:

- To enable a fire and rescue service specific risk assessment of this incident type, fire and rescue services must ensure those tasked with carrying out this assessment and developing procedures are competent
- Fire and Rescue Services must ensure their personnel are adequately trained to deal with hazards and risks associated with lifts and escalators
- The level and nature of training undertaken should be shaped by an informed training needs analysis that takes account of fire and rescue service guidance on the competency framework, national occupational standards and any individual training needs
- Training and development programmes should:

- follow the principles set out in national guidance documents
 - should generally be structured so that they move from simple to more complex tasks and from lower to higher levels of risk
 - will typically cover standard operational procedures as well as ensuring knowledge and understanding of equipment and the associated skills that will be required to use it; and
 - should consider the need for appropriate levels of assessment and provide for continuous professional development to ensure maintenance of skills and to update personnel whenever there are changes to procedure, equipment, etc
 - should also involve personnel involved in other processes that support the emergency response such as planners devising procedures and people procuring equipment.
- Specific training requirements for incidents involving lifts and escalators will include the standard operating procedure and the equipment to be used
 - Training outcomes should be evaluated to ensure that the training provided is effective, current and it meets defined operational needs as determined by the Fire and Rescue Service's integrated risk management plan.

Fire and Rescue Services must ensure that their personnel are provided with adequate initial training to identify the hazards and risks and procedures necessary to deal with incidents involving lifts escalators and moving walkways.

Arrangements should also be in place to ensure these skills are maintained through appropriate training and ensure personnel are informed of any changes to procedure or technological change.

Consideration should also be given to establishing and maintaining contact with lift and escalator equipment suppliers or trade associations so that new initiatives within the industry can be identified and training interventions can be kept current.

Command and control

The Incident Commander should follow the principles of the current national incident command system.

Prior to committing personnel into any hazard area, the Incident Commander must take account of the actual information about the incident that is available to make operational decisions in what are recognised as sometimes dangerous, fast moving and emotionally charged environments.

On arrival

On arrival, the Incident Commander should locate and liaise with the onsite responsible person (if available), assess the incident requirements and develop a plan based on:

- the nature of incident

- the location of the lift car/escalator and the safety control mechanisms (including hand-winding and electrical isolation controls)
- establishing and maintaining contact with persons involved (to provide reassurance) and identifying any medical conditions
- the need for any additional resources that may be required, particularly if persons are trapped by the lift car/escalator or in machinery.

If entry into the machine room is required, a minimum of two crew members with a radio and keys should be sent in.

A thorough safety brief prior to deployment of personnel within the hazard zone must be carried out. Separate briefings will be needed for personnel working in the machine room and for those working at other scenes of operations.

Incidents involving lifts and escalators will generally involve operational activities at two locations within the building, one at the scene of operations and one in a motor room; therefore effective lines of communication are essential. If building construction and the location of machine rooms adversely affects communications, alternative methods, such as the use of 'runners', should be considered.

Isolating the power supply

The lift or escalator power sources including auxiliary and back-up systems must be isolated as soon as possible. Lighting circuits should be left in operation as they are on a separate circuit to the lift supply. If the installed lighting is inadequate or defective, consideration should be given to the use of Fire and Rescue Service lighting.

In the case of some hydraulic lifts, the power supplies may need to remain in operation. In these cases, consideration should be given to additional control measures such as the provision of suitable electrically rated gloves to provide insulation against electric current.

Moving the lift or escalator machinery

The instruction sheet and available equipment contained in the machine room should be used as necessary to facilitate controlled movement of the lift car (up or down) or removal of the escalator combs. The equipment provided will normally consist of hand winding equipment and a brake release mechanism.

If the provided equipment is not available, the Incident Commander should consider the following hierarchy of actions

- contact on-site responsible person or engineer to obtain the necessary equipment
- obtain the same or similar equipment from nearby premises
- use Fire and Rescue Service equipment.

The Fire and Rescue Service equipment used at these incidents must be suitable for the task required and the personnel who are required to use it must be competent in its use. Any additional risk taken should be assessed and kept to a minimum, consistent with completing only the task necessary to affect a rescue.

The Incident Commander must only allow Fire and Rescue Service equipment to be used to release the brake mechanism and hand wind the lift when the delay that would be required to wait for the attendance of an engineer would lead to

- loss of life
- serious injury
- where the people in the lift are experiencing or are considered likely to experience high levels of distress and/or have existing medical conditions which are likely to be made worse if they remain in the lift car.

Under no circumstances should a lift car be allowed to travel uncontrolled by only using the brake release lever.

If any safety devices that are designed to prevent excessive lift car speed have engaged and the lift is being held in the shaft, only a competent person (ie a qualified lift engineer) should attempt to reinstate or move the lift.

People within the lift car should be instructed not to attempt to open doors and to move to the rear of the lift car prior to the doors being opened. A controlled exit should be initiated once the lift car is stationary, and within 300mm or less of being level with the landing and the braking mechanism is engaged.

Consideration should be given to identifying risk of falling from height and any areas containing unguarded edges or an open lift shaft should be marked with tape or barriers.

Entry of Fire and Rescue Service personnel into shafts

Personnel must not enter the shaft at a lift or escalator incident, unless there is an immediate risk of loss of life or serious life threatening injury.

Before personnel are committed into any shaft, the Incident Commander must assess whether:

- there is a safer option for undertaking the required task
- all practicable steps have been taken to remove or mitigate prevailing hazards
- safe access and egress can be maintained
- personnel have sufficient skills and equipment to undertake the whole task or whether additional resources will be required.

If a decision is made to commit personnel into the shaft, the Incident Commander must consider or implement the following:

- advice from any available engineers (if in attendance) before operations commence

- appoint and brief Safety Officers before personnel enter the shaft
- personnel must be fully briefed on their task, how this relates to the overall plan for the incident and all relevant safety considerations
- additional control measures such as working at height operations should be implemented as necessary
- the minimum required number of personnel and equipment necessary to undertake the task should be committed into a shaft
- consider the use of specialist equipment/appliances to stabilize or immobilize the lift/escalator.

Fire and Rescue Service personnel must **not** be permitted access into any shaft whilst the brake is being manually operated, hand winding is in progress and/or the lift car/escalator is moving.

If there is a need for immediate action by Fire and Rescue Service personnel to save life or prevent injury, the absence of an engineer should not prevent the commencement of operations, but the attendance of an engineer should be requested via the Fire and Rescue Service control.

Until an engineer is in attendance to provide specialist advice, the actions undertaken by Fire and Rescue Service personnel should only be the **minimum** that is necessary to save life or prevent further injury.

Persons trapped in machinery

If persons are trapped in machinery, the focus of operation should be to ensure the safety of personnel and stabilising the scene and casualty prior to affecting rescue.

Persons may become trapped in various ways including

- between a lift car and the landing floor
- in lift cables or by the counterweight
- between two lifts
- in the lift or escalator machinery
- on top of the lift car
- between the tread of escalators and the comb
- in an escalator moving handrail.

Other considerations for the Incident Commander

When more than one lift or escalator system is present, it is essential that the correct one is identified. There will usually be an identification number or letter that will correspond to the relevant lift or escalator. If there is any doubt, then all machinery should be isolated.

In the case of space saver lifts, if the control functions on the landing fail to operate or do not allow the occupants of the lift to be released, then the release should be left to a competent lift engineer.

Dependant on the size and nature of the incident, early consideration should be given to the provision of safety crews and to crew rotation and reliefs.

The Incident Commander should be aware machine rooms have been used illegally for a variety of purposes. It may therefore be necessary for the Incident Commander to request the attendance of the police, to remove the person(s) before Fire and Rescue Service operations can start.

The Incident Commander should remember that members of the public who are directly involved in the incident or witness to it may become distressed; in some cases, their behaviour may become erratic, aggressive or even violent and personnel should be briefed regarding this possibility.

Safety Officer(s)

The early appointment of one or more Safety Officer(s) will help ensure that risks are either eliminated or reduced to an acceptable level.

A safety decision-making model should be used to brief Safety Officers regarding the nature of the incident, the allocated task and prevailing hazards and risks. The Incident Commander should confirm that the Safety Officer understands:

- their role and area of responsibility
- allocated tasks
- lines of communication.

Those undertaking the Safety Officer role should:

- be competent to perform the role
- ensure personnel are wearing appropriate personal protective equipment
- monitor the physical condition of personnel and/or general or specific safety conditions at the incident, in accordance with their brief
- take any urgent corrective action required to ensure safety of personnel
- update the Incident Commander or senior safety officer regarding any change in circumstances
- not be engaged in any other aspect of operations, unless this is required to deal with a risk critical situation.

The role of a Safety Officer can be carried out by any of the fire service roles, but the complexity of the task, size of the incident and scope of responsibility should be considered by the Incident Commander when determining the supervisory level required.

Safety Officers should wear nationally recognised identification to indicate they are undertaking the Safety Officer role.

Fire and Rescue Services should ensure that training and other measures (such as aide-memoires) are in place and available to support those staff liable to undertake this role.

Incidents involving lifts or escalators will in most cases involve operations being undertaken at two distinct locations. Safety Officers should be nominated whenever personnel enter a shaft and on other occasions where they are required by the Incident Commander's risk assessment.

Personal protective equipment

Fire and Rescue Services must ensure that any personal protective equipment provided is fit for purpose and meets all required safety standards. When choosing suitable protective garments, the standard of clothing worn beneath the specialist personal protective equipment should also be taken into account. Consideration should also be given to the selection of suitable sizes and gender specific requirements of personal protective equipment.

Personal protective equipment should also take account of the need for rescuers to be visible against the operational background including night working and for the Incident Commander and other managerial and functional roles (defined in the national incident command system) to be distinguishable.

All personnel must use appropriate levels of service provided personal protective equipment and respiratory protective equipment as determined by the safe system of work.

Within this generic risk assessment a significant risk is contamination by a leakage of hydraulic fluid, Fire and Rescue Services should determine the level of personal protective equipment required to mitigate this risk.

The primary control measure to reduce the risk of electrocution and electric shock is isolation of the equipment from the power supply. If the Incident Commander is not certain that the power supply is isolated (eg due to equipment damage) and there is a risk to life that requires immediate action, suitably rated electrical gloves may be worn as an additional precaution.

NOTE 1

The use of electrical gloves is not a substitute for doing everything reasonably practicable to ensure the electrical supply is isolated.

If personal protective equipment or individuals are contaminated by body fluids or come into contact with human or animal excrement the Fire and Rescue Service's procedures for dealing with contaminated and soiled personal protective equipment should be followed. If there is any doubt regarding the level or degree of contamination, appropriate scientific or medical advice should be sought.

During hot weather or where machine rooms are poorly ventilated, it may be necessary to temporarily reduce the level of personal protective equipment when personnel are undertaking specific activities, such as ascending stairs to reach the machine room. This should only be done following the Incident Commander's risk assessment and this must take account of the prevailing hazards identified in Section 2 Significant hazards and risks.

Post incident

The following measures should be considered to help eliminate or remove risks after an incident, as appropriate to the nature and scale of the incident.

- Any safety events; personal injuries, exposure to hazardous substances or near-misses should be recorded, investigated and reported in line with legislative requirements such as *Reporting of Injuries Diseases and Dangerous Occurrence Regulations 1995*, etc
- Arrangements should be in place to either remove all contamination from personal protective equipment or to ensure it's safe and appropriate disposal and to check that personal protective equipment maintains the agreed levels of integrity and protection for the wearer throughout its lifecycle
- As appropriate, occupational health support and surveillance follow up
- Conduct a de-brief to identify and record any 'lessons learned' from the incident. De-briefs will range in complexity and formality, proportionate to the scale of the incident and in line with individual Fire and Rescue Service procedures
- Consider any changes required to safe systems of work, appliances or equipment in the light of any lessons learned from debriefs or from safety events
- Consider the need to review existing information held on a premises or location, or the need to add a new premises or location into future preplanning eg by adding to visit or inspection programme
- Staff should be supported and monitored to identify whether they are experiencing any adverse affects and to check whether they would benefit from accessing counselling and support services
- Consideration should be given to arranging for staff to make a contemporaneous written record of their actions. This information may be used to assist in any internal or external investigations or enquiries that follow any incident eg Coroner's Court, public enquiry, etc.

Following the closure of the incident the Fire and Rescue Service should enter into dialogue with the relevant local authority, premises owner, or the Health and Safety Executive to inform them of any poor standards of maintenance.

All lift and machine room door(s) should be closed and secured shut.

Where possible the person responsible for the equipment and/or premises should be informed of the actions taken. The electric power supply to the affected lift/escalator should remain isolated and clearly identified to assist with reinstatement of the system.

The electric power supply to any additional lifts/escalators that were isolated for precautionary purposes should be reinstated.

Where there is equipment or instruction sheets missing from the machine room, this should be reported to the responsible person or premises owner.

Any safety contraventions suspected or identified at an incident should be reported to the appropriate authority (this may be the local authority or the Health and Safety Executive).

When any incident involving persons trapped in lift/escalator machinery is concluded, the scene should be preserved as far as practicable and handed over to the police or the Health and Safety Executive for investigation.

Technical references	
1	Chapter 2 of Book 12 of the old version of the Manuals of Firemanship used to deal with the subject of lifts and escalators; however this information has yet to be added to the new manuals
2	Lift and Escalator Industry Association

SECTION 2

Summary of Generic Risk Assessment 2.3

Rescues from lifts and escalators

Task – Pre incident

Ref. No.	Activity	Hazard	Risk	Persons at risk	Control measures
1	Responding to emergencies	Turning out	See GRA 1.1	Fire and Rescue Service personnel Members of the public Other agencies	Contained in GRA 1.1
2		Proceeding to an incident	See GRA 1.2	Fire and Rescue Service personnel Members of the public Other agencies	Contained in GRA 1.2
3		Arriving and getting to work	See GRA 1.3	Fire and Rescue Service personnel Members of the public Other agencies	Contained in GRA 1.3

Ref. No.	Activity	Hazard	Risk	Persons at risk	Control measures
4	Using incident ground communications to control lift movements	Missed instructions Misheard instructions causing the machinery to be operated incorrectly or at the wrong time	Death or serious injury	Fire and Rescue Service personnel Members of the public Other agencies	Use of Fireground radio Use of Runners to pass messages Use of Safety Officers Planning Training.
5	Gaining access to machine rooms and shafts	Location in building Travel distances Equipment required Moving through doors, trapdoors and hatches Climbing vertical ladders Leakage of battery acid or fumes from back up/emergency lighting supplies	Falls from height Power supplies Removal of safety features Restricted spaces Manual handling Slips, trips, falls, sprains strains Musculoskeletal injuries, cuts abrasions Doors/hatches closing unexpectedly Equipment weight Struck by items falling from height	Fire and Rescue Service personnel Other agencies	Utilise lifting and carrying equipment Reduce loads and travel distances where possible Safe working at height procedures Safety officers Electrical gloves Braking systems engaged Minimum personnel within room or shaft Isolate power supplies Breathing apparatus Additional personal protective equipment.

Ref. No.	Activity	Hazard	Risk	Persons at risk	Control measures
6	Dealing with technical aspects of lift and escalator incidents	Unfamiliarity with the apparatus Skills fade Little or no knowledge of apparatus and how to use it	Range of injuries from minor cuts to fatalities	Fire and Rescue Service personnel Members of the public Other agencies	Read machine room instructions Give crews specific brief Seek specialist advice Safety Officers Use correct equipment.
7	Manually moving the machinery	Power source Entrapment in machinery Noise or lack of noise (moving machinery without warning provided by power systems) Working in restricted spaces	Electrocution/electric shock Crush injuries Slips, trips, falls, cuts abrasions Musculoskeletal injuries Hearing injuries	Fire and Rescue Service personnel Members of the public Other agencies	Isolate power supplies Maintain clear working environment Remove debris Use minimum personnel and equipment Safety Officers Safety systems engaged Additional lighting Briefing crew to expect machine movement without notice.
8	Interrupting the power systems	Electricity Hydraulic fluids	Electrocution/electric shock Contamination by fluids Rashes/allergies Slips, trips, fall Environmental issues	Fire and Rescue Service personnel Members of the public Other agencies	Isolation of power supplies Personal protective equipment Electrical gloves Specialist advice from engineers Fluid absorbent Safety Officers.

Ref. No.	Activity	Hazard	Risk	Persons at risk	Control measures
9	Working in restricted Spaces	See GRA 5.5 Machinery Power systems Trip hazards Shear traps Slack cables	See GRA 5.5 Fatal injury Electric shock Musculoskeletal injuries Entanglement in cables, slips trips falls	Fire and Rescue Service personnel Members of the public Other agencies	See GRA 5.5 Isolation of power supplies Removal of debris Introduction of minimal equipment into space Electrical gloves Restricting work areas Safety Officers Utilise on-site engineers.
10	Manual handling	Casualty handling Equipment handling Moving machinery	Crush injuries Sprains strains trips falls Musculoskeletal injuries Contact with body fluids	Fire and Rescue Service personnel Members of the public Other agencies	Safety Officers Utilise any specialist advice Utilise other agencies for casualty handling Appropriate personal protective equipment such as medical gloves.
11	Minimising the risk from lubricants	Oil and grease	Slips trips falls cuts abrasions Skin ailments Damage to the environment Spontaneous combustion	Fire and Rescue Service personnel Members of the public Other agencies	Specialist advice Safety Officers Utilise other agencies Medical advice Suitable absorbent Remove oxygen equipment Suitable personal protective equipment.

Ref. No.	Activity	Hazard	Risk	Persons at risk	Control measures
12	Distressed/aggressive members of the public	Physical Injuries caused by panic, stress and or intoxication Physical injuries caused by deliberate acts of violence	Range of injuries from minor injuries to falls from height and fatalities	Fire and Rescue Service personnel Members of the public Other agencies	Utilise other agencies Safety Officers Brief crews Engagement with other agencies as part of intelligence gathering Violence and aggression policy Use of cordons.
13	Unauthorised access to machine rooms	Acts of violence Involving weapons Drug related hazards Debris Booby traps Crush injuries Cuts, falls fatalities	Range of injuries from minor injuries to falls from height and fatalities	Fire and Rescue Service personnel Members of the public Other agencies	Full risk assessment undertaken once control of the machine room passed to the Fire and Rescue Service by the police. Engagement with other agencies as part of intelligence gathering.
14	Stored energy with lift	Range of injuries ranging from minor injuries to falls from height and fatalities	Musculoskeletal injuries Burns Electric shock Crush injuries	Fire and Rescue Service personnel Members of the public Other agencies	Strict control of the movement of equipment Safety Officers No persons within a shaft space whilst lift is being moved Read and follow hand winding instructions Ensure braking systems engaged. Power supplies isolated Braking reengaged as soon as possible.

Ref. No.	Activity	Hazard	Risk	Persons at risk	Control measures
15	Hazardous materials	Biohazards – Blood and other body fluids Human and animal excrement Hydraulic fluids Battery acid (fumes)	Infection Chemical burns	Fire and Rescue Service personnel Members of the public Other agencies	Decontamination procedure Seek medical advice. Individual Fire and Rescue Service to supply guidance on hazardous materials

Task – Post incident

Ref. No.	Activity	Hazard	Risk	Persons at risk	Control measures
16	Closing the incident	Unprotected equipment, open doors, shafts Debris Power supplies	All of the above	Fire and Rescue Service personnel Members of the public Other agencies	All of the above Leave with responsible person.