

# VANDAL-RESISTANCE OF LIFTS IN THE UK

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## 1. ABSTRACT

Vandalism is not a new phenomenon, and lifts exposed to largely unsupervised public usage are particularly vulnerable to the activities of vandals of all types.

Some forms of vandalism might simply cause temporary frustration and inconvenience for lift users and unnecessary expense for lift owners, building managers, etc.

Other vandalism may, however, endanger the lives of innocent persons as well as the vandal.

Protection against vandalism can begin at the design and planning stage of a lift installation, whilst other safeguards may need to be provided at existing lift installations.

This article describes the problems, and illustrates the UK "response".

## 2. VANDALS, VIKINGS OR VENTURERS?

The term VANDAL has long been used world-wide to describe a person who perpetrates nefarious acts aimed at damaging property in a wilful and senseless manner.

The original Vandal was a member of a Germanic people who, inter alia, sacked Rome in 455 AD, and vandalism has remained a synonym for wanton desecration or destruction of beautiful objects, buildings, etc.

At one seminar, a speaker described measures being undertaken in his country to counter vandalism which consisted mainly of the application of graffiti to lift car interiors. If this was the only type of vandalism encountered at lift installations it would be a great relief to those within the lift industry!!

All too frequently, vandalising of lifts includes defecation within lift cars, physical damage to car interiors, fittings, landing doors and lift-well enclosures, etc.

The term VIKING refers to a Scandinavian (Danish-Icelandic-Norwegian-Swedish) seafaring warrior or pirate who raided and colonised large areas of Europe between the 9th and 11th Centuries.

Traditionally, the activities of Vikings are said to have been concentrated mainly upon 'rape, pillage and murder', although it must also be recognised that their influence profoundly affected European history, eg via their settlement and trading policies.

(Legend also suggests that some Vikings actually sailed across the Atlantic to the American continent!).

The activities of these invaders are not too dissimilar from the behaviour of some modern-day morons who take advantage of lift cars being hidden from view within their liftwells to assault and/or rob fellow-passengers.

The mindless perpetrators of these criminal acts are usually not interested in vandalising lifts, which is why it might literally be more accurate to describe them as VIKINGS.

VENTURERS describes those who are inclined to take risks and expose themselves to hazards, or are prone to undertake daring deeds in pursuit of excitement.

A Venturer may be a bored school-child in a high-rise apartment block who views lifts as playthings, especially during holiday periods, week-ends, etc. Gaining unauthorised access into the well or onto the roof of a lift-car is seen as a challenge and a chance to impress other children.

Whilst it may be contended that the self-imposed dangers created by these Venturers are nothing less than they deserve, their irresponsible activities may also, unfortunately, endanger others who may be in or near a particular lift(s).

A fine demarcation line may exist between the vandal and the venturer, who is often one and the same person. Like vikings, venturers might not cause any damage to a lift in pursuit of their aims, but, in common with vandals, the activities of venturers might create hazards for others, such as intending passengers, very young and inquisitive children, etc. A landing-door left unlocked with the car away from that landing is a prime example.

The foregoing summation briefly describes those persons or groups within present-day society who at very least inflict wanton damage to property and inconvenience to their fellow-beings, and at worst endanger the lives of others.

Continuing with the alliterative nature of the summation it is important to spare a thought for those who suffer most from the sickening activities of vandals, vikings and venturers - THE VICTIMS.

[Note: Another notorious and barbaric European group who raided Roman territories and elsewhere in the Baltic regions during the 4th Century were the Visigoths - but that's another story!!!]

Although different terms have been used to describe the three different types of miscreant, it is recognised that the terms VANDAL(S) and VANDALISM are universally used to describe the three types and their misdeeds. Accordingly, the same policy will be adopted generally within the ensuing text.

### 3. THE CURRENT SITUATION

3.1 The modern-day development of certain types of premises exposed to public utilisation has increased the likelihood of vandalism due to the lack or inadequacy of

supervision, ready access to amenity equipment such as lifts (elevators) and escalators, prolonged exposure times, etc.

3.2 A prime example of such premises is the residential apartment building, often owned and managed by public authorities. Although a caretaker/janitor might live in or near the building it would be unusual for his/her duties to include regular security-type patrolling of the whole premises. It must also be recognised that in such premises the lobby areas around lift landings, and machine-rooms often become play-areas for children and young people living or visiting there, and a lift installation may become a plaything for idle hands and bored minds.

3.3 Examples of other types of public premises prone to the activities of vandals are multi-storey car parks and shopping precincts/malls. Whilst it is becoming more and more common to find security patrolling within the latter type of premises, the same situation does not often prevail at car parks.

3.4 It might be contended that society as a whole is responsible for the overall vandalism problem, and responsibility for protection must therefore be shared between regulatory authorities, building owners/occupiers, parents, law enforcement authorities, etc.

3.5 However, there is much that can be done by those responsible for standards within the lift industry and by those responsible for enacting and enforcing relevant regulations for lifts, to increase the vandal-resistance properties of designated lift installations.

#### **4. COMMENTARY**

4.1 The interiors of a lift car and the exterior surfaces of liftwell enclosures offer very little impediment to the attentions of vandals - in common with other types of facilities, structures and equipment commonly to be found in premises used by the public.

4.2 Careful selection of materials, surface-coatings, etc may prevent or curtail the common types of cosmetic or chemical damage wilfully inflicted, including compatibility with a variety of cleaning materials required to be used.

4.3 Similarly, enhancement of the strength and support of materials and components used in the construction of lift cars or well enclosures will be required if the vandal intent upon inflicting physical damage to the lift installation is to be thwarted.

4.4 Prevention of unauthorised stoppage of a lift car between landings is recognised as an important requisite of modern lifts, and, where necessary, the standard types of protection against such a happening may be increased.

4.5 Similarly, additional measures may be provided to prevent unauthorised access to a lift well or a machine-room, where necessary.

4.6 Vandals prefer to perform clandestinely and those intent upon vandalising a lift car interior may be discouraged if persons at landings are able to peer into the car via transparent sections of car doors and landing doors.

## 5. STANDARDS

5.1 European Standards (EN 81 Parts 1/2) and British Standards (BS 5655 Parts 1/2) clearly are not intended to specify vandal-resistance requirements for lifts. These Standards have been drawn up 'taking into account in certain cases the imprudent act of a user', and the wilful activities of a vandal clearly are outside such a proviso. Indeed, it may be contended that a vandal is usually not a 'lift user' in the accepted sense of that term.

5.2 British Standard 5755: Part 6 (Code of Practice for selection and installation of lifts) refers only very little to protective measures against vandalism, eg vandal-resistance of the emergency release mechanism for landing doors.

## 6. EUROPEAN COMMUNITY (E.C.) DIRECTIVE

6.1 The dedicated EC Directive for passenger lifts will require the problems associated with vandalism to be addressed. Accordingly, the E.C. mandate requesting the European Committee for Standardisation (CEN) to produce a harmonised CEN Standard for lifts requires such a Standard to deal, inter alia, with 'specific requirements for vandal-resistant lifts.'

## 7. CURRENT ACTIVITIES WITHIN UK

7.1 Concern over the growing problem of vandalism at lifts has resulted in the formation of a British Standards Institution (BSI) panel composed of persons who are fully cognisant of the lift-vandalism problem and who are able to contribute effectively to the task of identifying and specifying appropriate preventative measures.

7.2 The results of this work should assist those within the UK who are currently faced with the problem of vandalism at lifts and the recommendations may eventually prove useful to those within CEN who are eventually allotted the EC-mandated task of producing 'specific requirements for vandal-resistant lifts.'

7.3 It should be noted that the recommendations of the UK panel will refer to new lift installations; however, some of the recommended measures may be capable of being provided retrospectively at existing lifts. The proposed Code of Practice is intended to supplement the requirements of the Standards quoted earlier in section 5.

## 8. A RESUMÉ OF SOME PREVENTATIVE MEASURES

### 8.1 General

8.1.1 Vandalism may sometimes be prompted by frustration resulting from inadequate or inefficient performance of a lift or group of lifts.

8.1.2 Overlong car travel times and automatic door dwell times, lack of car position indicators at all landings, non-use of 'lift out of service' indicators, unnecessary stops at landings of fully-loaded cars are typical frustration-inducing features of some lift installations.

## 8.2 Machine Room

8.2.1 Apertures should be kept to a minimum; a windowless machine room is preferable, and ventilation openings should be inaccessible from the outside, if possible.

8.2.2 If ventilation openings are accessible, they should be specially protected, for example, by restrictions on overall dimensions and sizes of apertures (eg perforations) and by minimum strength requirements.

8.2.3 Access doors should close automatically, and should be self-locking whilst still being capable of being opened from the inside without a key.

8.2.4 The ability of doors and their locking devices to withstand forces higher than normally anticipated should be established.

8.2.5 The warning notices recommended in relevant Standards should be of durable, and non-flammable material, and permanently fixed in such a manner as to deter their unauthorised removal.

## 8.3 Lift Well Enclosure

8.3.1 Preferably, the enclosure should be of solid construction and continuous between floors and ceilings throughout its height.

8.3.2 Ventilation openings should be inaccessible from outside the lift well, but if accessible they should be constructed as recommended in section 8.2.2.

8.3.3 Particular attention should be paid to the mechanical strength of landing doors and their locks, and for horizontal sliding doors a door panel should be retained in position even if failure of roller or guide shoe assemblies occurs.

8.3.4 It should be established that top and bottom displacement of landing door panels is severely limited when the doors are subjected to an undue force from the landing side.

8.3.5 If landing door panels are mechanically linked the linkage should be inaccessible during normal operation.

8.3.6 The materials and decorative finishes of lift well enclosures, landing doors and landing entrances should be resistant to damage from cleaning materials and body fluids.

#### 8.4 Car Enclosure

8.4.1 The strength of car doors and their ability to withstand the application of undue forces should be similar in principle to the requirements for landing doors, although the type and degree of forces to be resisted might differ.

8.4.2 The walls and floors of cars should be resistant to damage from cleaning materials and body fluids, and suitable protection against unacceptable levels of spread of flame over the internal surfaces of car enclosures should exist.

8.4.3 It should not be possible under normal operation to open manually a car door(s) whilst the car is in motion or whilst it is stationary outside the unlocking zone.

8.4.4 Means should not be provided to permit access or egress of persons via a car roof.

8.4.5 Light fittings within a car should have a strength equal to that of the car enclosure; they should be flame-retardant and should be accessible only from outside the lift car.

#### 8.5 Landing and Car Door Installation

8.5.1 A baffle or similar device should be fitted to the bottom of doors to prevent the passage of foreign objects into the lift well when doors are closed.

8.5.2 Means should be provided to prevent or limit unauthorised access to door operating mechanisms and to the horizontal gaps between car doors and landing doors.

8.5.3 A horizontally-sliding door panel should not be moved more than 20mm from the vertical under the application at the most unfavourable point of any anticipated normal force in the direction of opening.

#### 8.6 Control Panels (Car and Landing)

8.6.1 Panels should be fitted without fixings visible from the car or landing.

8.6.2 All fixtures should be of a type designed to resist vandalism.

8.6.3 Control buttons should be suitably flame-resistant and water-resistant; they should also be designed to deter jamming and the insertion of foreign objects into operational gaps.

8.6.4 'Stop' buttons should not be provided at landings or within cars.

## 8.7 Alarm Devices

8.7.1 Suitable alarm devices should be provided at each car which can be clearly heard from within the car, at the nearest landing, and at a remotely located, continuously manned point.

8.7.2 Serious consideration should also be given to the provision of an intercommunications system between each car and a remote, manned location.

## 8.8 Emergency unlocking of landing doors

8.8.1 Emergency unlocking should be provided only at:-

- a) the first available landing above the bottom landing which permits safe access onto the roof of the car;
- b) the bottom landing, if this landing is the normal access to the pit;
- c) the top floor served.

8.8.2 The unlocking device required in British and European Standards should be made vandal-resistant, eg in the manner depicted in figure 1.

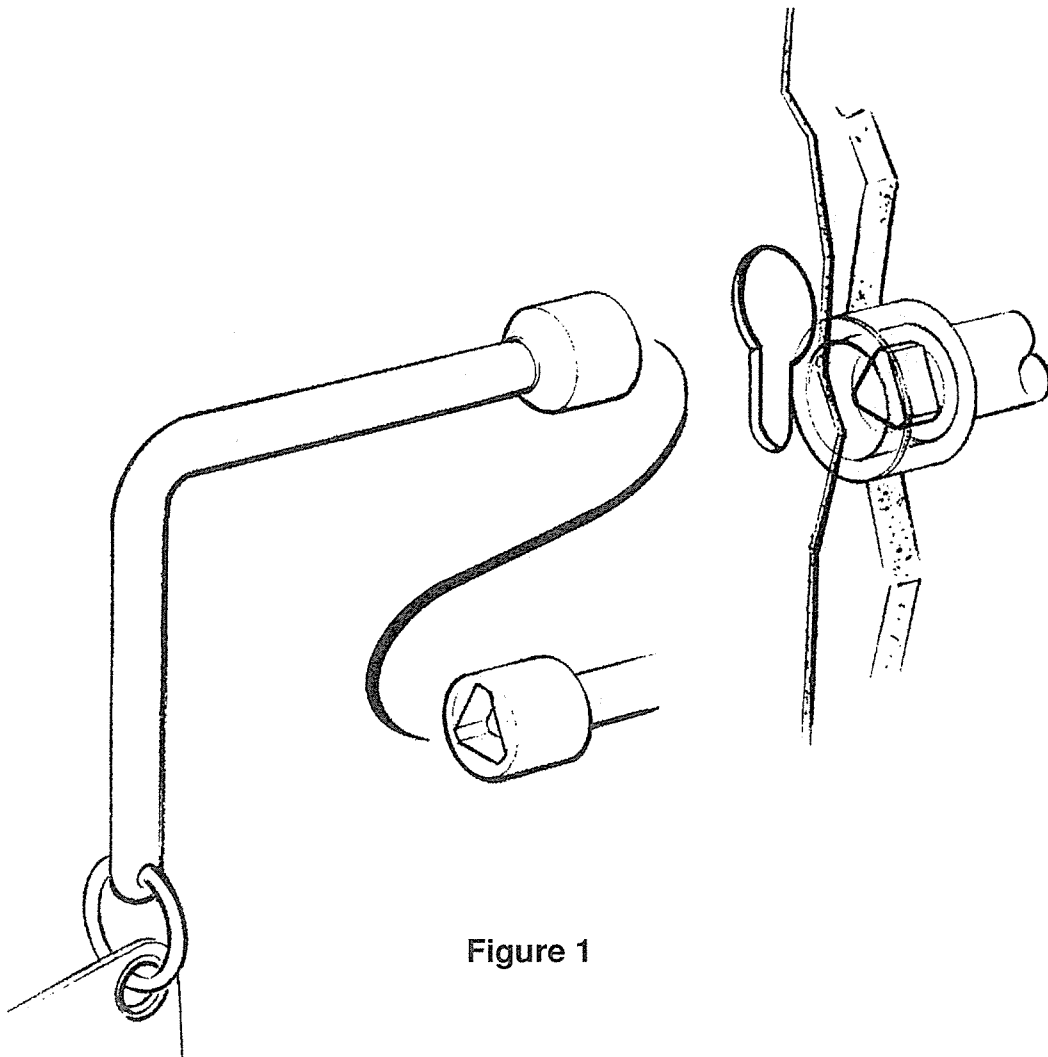


Figure 1

8.8.3 It should be noted that the 'triangular-key' device required in the Standards is intended to achieve uniformity rather than vandal-resistance, and experience has indicated how easily it can be defeated in practice.

8.8.4 Figure 2 depicts various types of emergency unlocking keys which have been employed within the UK and illustrate some ways in which the vandal-resistant properties of these keys have been enhanced.

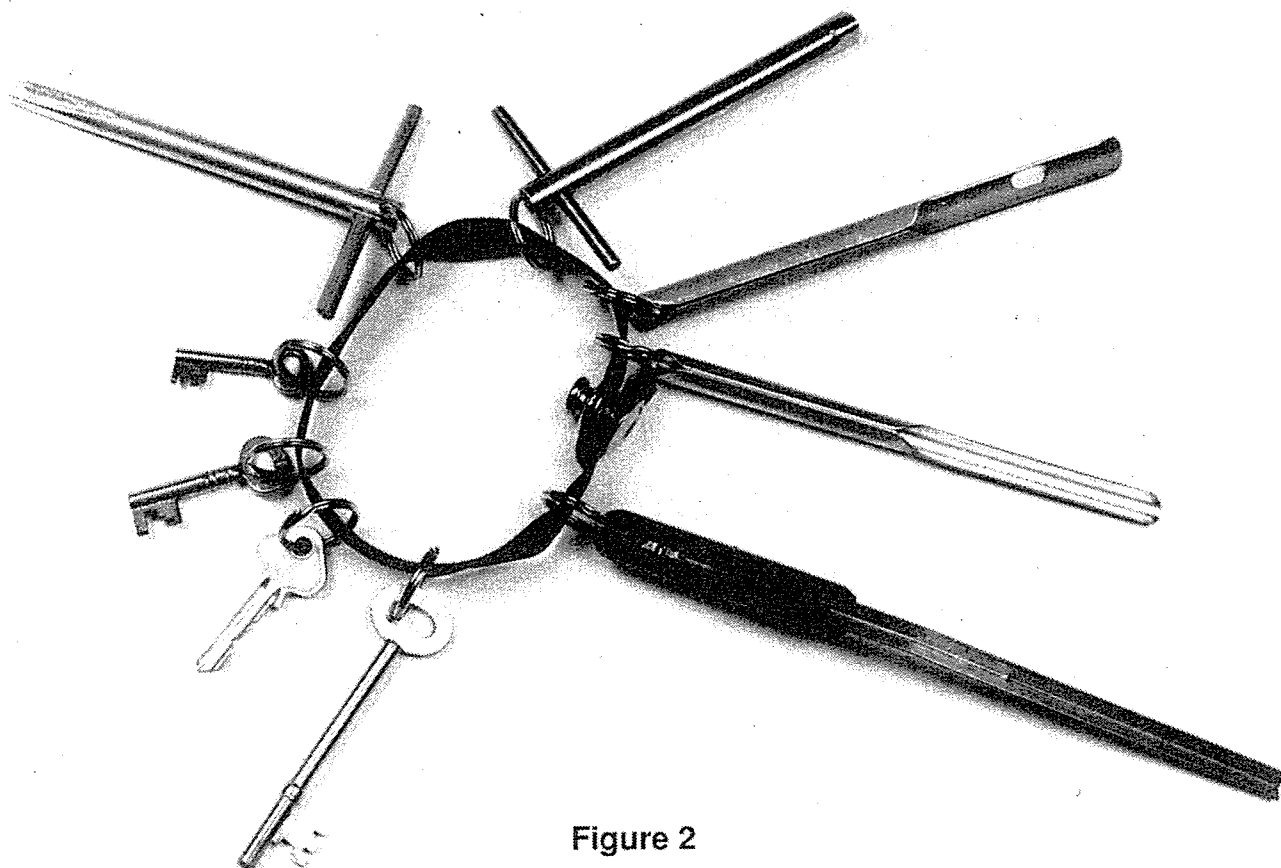


Figure 2

## 9. MISCELLANEOUS

9.1 The foregoing resume is not claimed to be exhaustive, and some features already under consideration by the BSI panel have been excluded in the interests of brevity.

9.2 For example, no reference has been made in Section 8 to:--

- a) anti-corrosion measures for car sling, landing sill supports;
- b) landing indicators;
- c) car ventilation;
- d) landing/car sills;
- e) astragals;



f) use of glass/plastics.

## 10. EXISTING LIFT INSTALLATIONS

10.1 It was mentioned earlier (7.3) that current BSI activities are targeted at enhancing the vandal-resistance properties of new lift installations, and it is anticipated that such guidance will be considered seriously by architects, developers, builders, planners, lift makers etc.

10.2 However, it is very obvious that vandalism at lifts may occur irrespective of the age of the lift installation, and the need to consider carrying out retrospective improvements to certain existing lift installations is extremely important, making use of the types of preventative measures highlighted in sections 8 and 9.

10.3 It should be recognised that the likelihood of achieving a vandal-PROOF lift installation is remote, if not impossible, particularly at existing lift installations.

10.4 Accordingly, devices are now being provided or are undergoing development which will give automatic audible warning if:-

- a) unauthorised opening of a landing door occurs;
- b) a lift car stops away from a landing;
- c) an unauthorised person gains access (or is about to gain access) to the car top.

10.5 The latter device can also be made to prevent subsequent operation of the lift for a pre-set time.

## 11. THE USE OF GLASS IN LIFTS

11.1 The use of glass in the construction of lift cars and lift well enclosures has increased greatly in recent years, and lifts of this type are most often installed in very public premises such as shopping malls, department stores and large hotels where it is unlikely that the more serious types of vandalism - which requires some time to execute - will occur.

11.2 Indeed, it may be claimed that this form of 'exposed vertical transportation' decreases the likelihood of vandalism because of the preference for vandals to conduct their nefarious acts out of sight of others.

11.3 Experimentation is in fact being undertaken at a lift installation in a public-authority apartment building where glass car doors and glass landing doors have been installed.

11.4 The visual exposure of car interiors might also help to protect against the potential menace of 'vikingism'.

## 12. CONCLUSIONS

12.1 Vandalism is not about to disappear overnight, and it needs continued vigilance on the part of those responsible for day-to-day safety at lift installations, and considered forethought and planning by lift makers, developers, builders, architects, consultants etc if the threats posed by vandalism are to be countered effectively.

12.2 Certain premises will be more prone to vandalism than others, and this factor should always be fully considered at the forward planning stages of new projects.

12.3 It is encouraging to note that the problems of vandal-resistant lifts is being addressed by the European Community and the European Committee for Standardisation.

12.4 In the fight against vandalism it must always be remembered that the innocent are often endangered when vandals are allowed to operate without constraint.

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