



**Association of Building  
Hardware Manufacturers**

# **Best practice guide**

**Lever handles and  
knob furniture to  
BS EN 1906**

**in association with**



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## • ABHM BEST PRACTICE GUIDES

This publication is one in a series of guides addressing the major issues that should be considered when specifying, ordering or using the products it describes. It aims to provide the reader with a concise document which includes a summary of relevant sections from the new European standard. The reader will then be in a position to seek further specialist advice where necessary and recognise **GENUINE** conformity to the new standards

## • BS EN 1906 Building Hardware - Lever handles and knob furniture

This standard details performance requirements and test methods in relation to corrosion resistance, security and other aspects pertaining to the application of lock and latch furniture.

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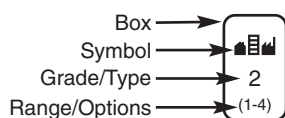
## • SCOPE

The European standard specifies the performance requirements and test methods (i.e. durability, static strength, operating torque, corrosion, safety, etc.) for sprung and unsprung lever handles and knobs for doors on backplates or roses. It applies only to lever handles and knobs that operate a lock or latch. The standard has 4 grades of performance. Compliance with the standard ensures a margin of strength in excess of that needed for normal operation. The standard has additional graded safety requirements where a high risk of falling exists.

## • CLASSIFICATION

BS EN 1906 classifies door furniture by using an 8 digit coding system. A similar classification applies to all building hardware product standards so that complementary items of hardware can be specified to, for instance, a common level of corrosion resistance, category of use, etc. Each digit refers to a particular feature of the product measured against the standard's performance requirements.

The ABHM recommends the use of graphic icons to enhance clarity of information and has devised a system to facilitate assimilation of the various product classifications. Each feature within the product classification is represented by an icon comprising four elements; Symbol, Grade/Type, Range/Options and Box:-



The icon above is for a product which meets Grade 2 in the Category of Use classification, where EN 1906 stipulates a range of four possible grades from 1 to 4.

Full details on the ABHM graphic icons system can be found [on this CD](#) or at [www.abhm.org.uk](http://www.abhm.org.uk)

### **Digit 1 Category of use**

Four grades are identified:-

- grade 1: medium frequency of use with a high incentive to exercise care and a small chance of misuse, e.g. internal residential doors;
- grade 2: medium frequency of use by people with some incentive to exercise care but where there is some chance of misuse, e.g. internal office doors;
- grade 3: high frequency of use by public or others with little incentive to exercise care and with a high chance of misuse, e.g. public office doors;
- grade 4: high frequency of use on doors which are subject to frequent violent use, e.g. football stadiums, oil rigs, barracks, public toilets, etc.

### **Digit 2 Durability**

Two grades of durability are identified:-

- Grade 6: medium use - 100 000 cycles
- Grade 7: high use - 200 000 cycles

The tests undertaken to achieve these grades involve the application of additional forces to the door furniture in order to simulate the conditions of use likely to be experienced in the field.

### **Digit 3 Test door mass**

No requirement

### **Digit 4 Fire resistance**

Two grades of fire resistance are identified:-

- grade 0: not approved for use on fire/smoke door assemblies
- grade 1: suitable for use on fire/smoke door assemblies.

Note: A Grade 1 classification means only that the furniture has been designed for use on fire/smoke control doors; the actual fire performance achieved (e.g. fire integrity of 30 minutes on a partially glazed timber door etc.) will be contained in a separate fire test report.

### **Digit 5 Safety**

Two grades of safety are identified:-

- grade 0: normal use
- grade 1: safety application - to qualify for this grade, handles must have high strength handle-to-plate and plate-to-door fixing and/or handle-to-spindle fixing, such that they would withstand a person grabbing in order to prevent falling. It is recommended that only Safety Grade 1 furniture is used at the top of cellar steps or other staircases.



## Digit 6

### Corrosion resistance

Five grades are identified according to EN 1670:-

- grade 0: no defined corrosion resistance
- grade 1: mild resistance - minimum requirement for internal use
- grade 2: moderate resistance
- grade 3: high resistance - minimum requirement for external use
- grade 4: very high resistance - recommended for use in exposed marine atmospheres or very polluted industrial environments.

Note: Products intended to develop a natural patina (such as bronze or brass) are not required to comply with any requirements.



## Digit 7

### Security

Four grades are identified:-

Grade 0 : not approved for use on burglary resistant doors

- grade 1: mild burglary resistance
- grade 2: moderate burglary resistance
- grade 3: high burglary resistance
- grade 4: extra high burglary resistance

Note: The main requirements include resistance to drilling, close fitting plates or escutcheons to help protect the lock and support the cylinder. They must be resistant to removal from the outside of the door and make provision to minimise the cylinder projection to a maximum of 3mm. Full details of the requirements can be found in BS EN 1906.



## Digit 8

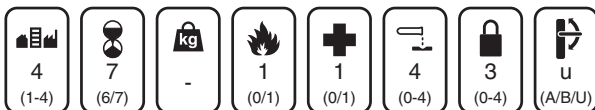
### Type of operation

Three operation types are identified:-

- type A: spring assisted furniture
- type B: spring loaded furniture
- type U: unsprung furniture

## • EXAMPLE:

The following marking denotes a lever handle for high frequency use on a door that is also subject to frequent violent usage. There is no classification for door mass, but it is suitable for use on fire/smoke door assemblies, and for where safety is important. It has a very high corrosion resistance suitable for external doors. It has high burglarly resistance and is of the unsprung type.



## • MARKING

Packaging, labelling, or the product itself should be marked with the following information:

- (a) manufacturer's name or trademark or other means of positive identification
- (b) product model identification
- (c) classification as detailed above

- (d) the number of this European standard
- (e) the year and week of final assembly by manufacturer.

Note: this information can be in coded form.

## • RELATED STANDARDS

Other European standards related to BS EN 1906 are:

- BS EN 1303: 1998 Cylinders for Locks
- prEN 12209: Locks and Latches
- BS EN 1670: 1998 Corrosion Resistance
- BS EN 1634-1: 2000 Fire Resistance Tests for door and shutter assemblies

## • FIRE DOOR ASSEMBLIES

Lock and latch furniture for use on fire/smoke doors requires a set of lock and latch furniture to comply with appropriate requirements of the European standard.

In addition -

For lock and latch furniture to be declared suitable for use on fire/smoke door assemblies, a third set of lock or latch furniture should be incorporated in a door assembly that has satisfied the criteria of a fire test according to BS EN 1634-1.

This furniture should be fitted only to an identical design, shape and size of door assemblies compliant with specific fire test requirements.

## • SPECIFICATION ISSUES

Security - Security lock furniture is one element of a burglary resistant door assembly that includes the door leaf and frame, lock, hinges and the method of fixing. Main design requirements include the use of at least two through-door fixings which cannot be detached from the outside. Requirements also include the use of an internal plate with a cylinder aperture that closely matches the cylinder profile and that the cylinder does not project more than 3mm from the face of the plate. Full details of the requirements can be found in BS EN 1906.

Springing - Type A furniture has light springing only and is dependant upon the lock/latch springing to fully return the lever to the 'at rest' position. Type B furniture has integral springing capable of returning the lever to its rest position, whilst Type U is dependant wholly upon the the lock/latch to return it to its rest position. It is essential, therefore, to select the correct lock/latch to suit the associated furniture

Application - It is most important to specify the correct grade of door furniture for the intended application. For example, Category of Use Grade1 levers are most suited for light residential use, whereas Grade 4 door furniture is the most appropriate choice for buildings such as schools and sports stadia where there will be a high level of use, and possible abuse.

## • CE MARKING

BS EN 1906 has not been designated as a harmonised product standard under the Construction Products Directive and therefore CE marking of such lever handles and knobs is NOT permitted.

## Additional important considerations

In addition to ensuring that products satisfy the requirements of this standard, other factors should be taken into consideration when selecting lever handles and knob furniture. These not only include sourcing products from a reputable manufacturer, but also quality assurance, support services and unequivocal conformity to the standard as detailed below:

### • QUALITY ASSURANCE

The internationally recognised standard for quality assurance, BS EN ISO 9000 provides confidence that the products are being manufactured to a consistent quality level. All ABHM members operate recognised BS EN ISO 9000 Quality Assurance Schemes.



Companies displaying this symbol are registered under the BSI Registered Firm Scheme.

### • SUPPORT SERVICE

The correct installation of lever handles and knob furniture is essential to ensure that they are able to operate efficiently within the performance levels described in this standard. Specialist advice is available from ABHM members in support of their products from specification stages through supply to effective operation on site.

### • CONFORMITY

Conformity to the standard must be clearly and unequivocally stated. Such phrases as "tested to ...", "designed to conform to ...", "approved to ...", are not sufficient. To avoid misleading or confusing claims it is recommended that one of the following phrases is used when stating conformity:

a) This product has been successfully type-tested for conformity to all of the requirements of BS EN 1906. Test reports and/or certificates are available upon request.

b) This product has been successfully type-tested for conformity to all of the requirements of BS EN 1906 including the additional requirements for fire/smoke door use\*. Test reports and/or certificates are available upon request.

\*Add as appropriate.

c) This product has been successfully type-tested for conformity to all of the requirements of BS EN 1906 including the additional requirements for fire/smoke door use\*. Regular audit testing is undertaken. Test reports and/or certificates are available upon request.

\*Add as appropriate.

It is recommended that an [ARGE Declaration of Compliance](#) is also completed, as this gives a clear and unambiguous method of demonstrating test evidence and compliance.

## ABHM PROFILE

Formed in 1897 to represent the interests of brassfounders, the ABHM and its members has been instrumental in the industry's advancement over the last 100 years.

Innovations in material and manufacturing technologies as well as changes in the building industry throughout the world have resulted in the development of a wide range of new products and practices. These advances have, in turn, required new skills and knowledge from the designer and manufacturer of the products themselves through to the specifiers, stockists and installers in the various sectors of the building industry.

The Association and its members have consistently risen to this challenge, creating products which meet the needs of a changing world and developing performance standards alongside national and international organisations, such as BSI

and CEN, which enable the industry to select and compare hardware with confidence.

The advances made throughout the industry are reflected in the Association's structure, the diversity of its membership and the wide range of activities in which it is involved. The ABHM now represents the United Kingdom's leading manufacturers of building hardware, architectural ironmongery and door and window fittings as well as providing the technical expertise essential for the formulation of performance standards at home and abroad.

All members are listed [on this CD](#) and on the [ABHM website \(www.abhm.org.uk\)](#), which includes a guide to the products and services available from each member.

### British Hardware Federation

BHF represents some 3,500 ironmongery, hardware and DIY shops in the United Kingdom. In addition, it embraces the Independent Builders Merchants Service, a specialist division of the Federation.

### Builders Merchants' Federation

The Builders Merchants' Federation represents the majority of bona fide merchants in the UK. Its members have a combined turnover of £6 billion a year. Members range from large nationals to small independents.

### Guild of Architectural Ironmongers

Founded in 1961, the Guild represents 95% of bona fide distributors within the UK and the majority of manufacturers of architectural ironmongery. The Guild serves to further all aspects of architectural ironmongery by promoting the interchange of information to encourage better product design and high professional standards of ironmongery scheduling and specification.

### Master Locksmiths Association

The MLA is recognised by the Home Office, Police and The British Standards Institution as being the authoritative body for locksmithing. It was formed to promote the membership to Central and Local Governments, Industry, Commerce and the Public.



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### 1.0 Introduction

Fire-resisting doorsets will always incorporate either lever handles or knobs if the doors are latched or pull handles/push plates if unlatched.

### 2.0 Critical recommendations

- 2.1 Lever handles and knobs should comply fully with BS EN 1906 – Building hardware – Lever handles and knobs. Preferably, this evidence should be provided by an approved third party certification or testing body. (see Notified Bodies and Additional Voluntary Marking in the '[Guidance Notes on CE Marking](#)' section of this CD, clauses 2.3 and 4.4 respectively). A product performance standard for pull handles is expected to be published shortly.
- 2.2 All door furniture should have demonstrated its ability to be suitable for the intended purpose, by inclusion in satisfactory fire tests to EN1634-1, on a type of doorset and configuration in which it is proposed to be used. This evidence should be provided by an approved third party certification or testing body (see Notified Bodies in the '[Guidance Notes on CE Marking](#)' section of this CD, clause 2.3).
- 2.3 The installation should always ensure that the absolute minimum amount of wood is removed in order to reduce the risk of fire or smoke penetrating the door.
- 2.4 The use of intumescent sleeves around the fixing holes is always recommended and may, in some cases, be a requirement of the applicable fire performance assessment schedule.

### 3.0 Commentary

- 3.1 The material used in the construction of lever handles, knobs and pull handles/protection plates has not been found to greatly affect the fire performance of the doors to which they are fitted. Therefore, it is not possible to state that any material is better than another in this regard.
- 3.2 Generally it is also true that the actual size of the lever handle or pull handle has no effect upon the fire performance of the doors to which they are fitted.
- 3.3 The durability of the fixings for lever handles will have a large effect on the effective life of the item and the eventual safety of the occupants. Therefore, when considering the selection of these items, preference should be given to those that can demonstrate compliance with the higher durability levels contained in BS EN 1906. These will have the support roses and backplates fixing back to back through the lock case, a performance bearing between the lever and rose and the spindle securely fixed into the lever on both sides.
- 3.4 In the absence of any performance standard for pull handles, the use of bolt thorough fixings, rather than face fixed screws will prove more durable although the heads of the fixing bolts should be protected.
- 3.5 Door protection (aka kicking) plates fitted at the bottom of the door have not been shown to have any effect on the fire performance of timber doorsets.
- 3.6 Push plates of conventional sizes, which can be screw or adhesive fixed, can also be specified without problem.
- 3.7 Main entrance doors, where they also fulfil fire and smoke functions, should also use items of ironmongery which follow the guidance given above.
- 3.8 For ease of use it is preferable that lever handles are used rather than knobs.
- 3.9 Wherever possible the fixing of a letter plate to a fire-resistant door should be avoided. Prime consideration should be given to installing the letter plate elsewhere. Both free standing and wall mounted postal boxes are available as an alternative. More detailed information can be found in the [Letterplates](#) section of this CD.

- 3.10 The materials from which door viewers are made will affect the performance of the door. Plastic lenses may melt very quickly leaving a hole large enough to cause early integrity failure, as may plastic or low melting point alloy casings. On the other hand, substantial steel or brass casings may also increase the risk of early integrity failure by rapid heat transfer through the thickness of the leaf. As with all items of fire door hardware, it is essential that the hole cut in the door to fit the device should be as small as is practically possible.

### 4.0 Fire issues

Many of the best practice guides in this section refer to classification of the suitability of the associated products for use on fire resistant and/or smoke control doors.

Currently the following test methods and classification documents are relevant:

**BS EN 1634-1: 2000** - *Fire resistance tests for door and shutter assemblies: Part 1 – Fire doors and shutters;*

**BS EN 1634-3: 2001** - *Fire resistance tests for door & shutter assemblies: Part 3 - Smoke control doors & shutters*

**BS EN 13501-2: 2003\*** - *Fire classification of construction products and building elements: Part 2 – Classification using data from fire resistance tests (excluding products for use in ventilation systems).*

**BS 476: Part 22** - *Fire tests on building materials and structures: Part 22 - Methods for determination of the fire resistance of non-loadbearing elements of construction*

\* Standard in course of publication

See also the Product /application related questions in the [FAQ section](#) of this CD.