



Door & Hardware  
Federation

raising standards

# best practice guide

Single-axis hinges to

# BS EN 1935

in association with



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## • DHF 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 product 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 1935 Single-axis hinges

This standard provides details on product types, classification by use, test cycles, door mass, corrosion resistance, as well as definitions, product performance requirements, test apparatus, test methods and marking of products. In addition, the published standard includes annexes with details for special applications .

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Note: This standard has replaced BS 7352:1990: *Specification for strength and durability performance of metal hinges for side hanging applications and dimensional requirements for template drilled hinges.*

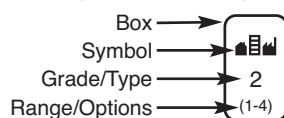
## • SCOPE

This European standard specifies requirements for single-axis hinges for windows and doors opening in one direction only, whose rotation axis is no more than 30mm from the face of the sash or door. It covers both fixed pin and lift-off hinges, and contains additional requirements for hinges intended for use on fire doors.

## • CLASSIFICATION

BS EN 1935 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 DHF 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 1935 stipulates a range of four possible grades from 1 to 4.

Full details on the ABHM graphic icons system can be found at [www.dhfonline.org.uk](http://www.dhfonline.org.uk)

### Digit 1 Category of use

Four categories of use are identified:

- grade 1: light duty
- grade 2: medium duty
- grade 3: heavy duty
- grade 4: severe duty

### Digit 2 Durability

Three grades are identified for single-axis hinges manufactured to this European standard:

- grade 3: 10 000 test cycles, for light duty hinges on windows only
- grade 4: 25 000 test cycles, for light duty hinges on windows and doors
- grade 7: 200 000 test cycles, for medium, heavy and severe duty hinges on doors only

### Digit 3 Test door mass

Eight door mass grades related to single-axis hinges are identified in this European standard as shown in Table 1 below.

Table 1

Test door mass grade	Door mass
0	10 kg
1	20 kg
2	40 kg
3	60 kg
4	80 kg
5	100 kg
6	120 kg
7	160 kg

### Digit 4 Suitability for fire/smoke door use

Two grades of suitability are identified for single-axis hinges:

- grade 0: not suitable for fire/smoke resistant door assemblies
- grade 1: suitable for fire/smoke resistant door assemblies subject to satisfactory assessment of the contribution of the single-axis hinge to the fire resistance of the specified fire/smoke door assemblies. Such assessment is beyond the scope of this European standard (see EN 1634-1).

### Digit 5 Safety

Single-axis hinges are required to satisfy the essential requirements of safety in use. Therefore, only grade 1 is identified.



## Digit 6 Corrosion resistance

Five grades of corrosion resistance are identified in accordance with EN 1670:

- grade 0: no defined corrosion resistance.
- grade 1: mild resistance.
- grade 2: moderate resistance.
- grade 3: high resistance.
- grade 4: very high resistance.



## Digit 7 Security

Two grades of security are identified for single-axis hinges:

- grade 0: not suitable for use on burglar-resistant door assemblies
- grade 1: suitable for applications requiring a degree of security. Annex C of this European standard details the hinge grade to use for the level of security required.



## Digit 8 Hinge grade

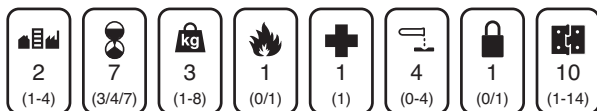
Fourteen grades are identified in this European standard and are detailed in Table 2 below. The full classification is shown in the standard.

**Table 2**

Hinge grade	Usage	Test cycles	Door mass
1	Window	10 000	10 kg
2	Window	10 000	20 kg
3	Window/Door	25 000	20 kg
4	Door	200 000	20 kg
5	Window	10 000	40 kg
6	Window/Door	25 000	40 kg
7	Door	200 000	40 kg
8	Window	10 000	60 kg
9	Window/Door	25 000	60 kg
10	Door	200 000	60 kg
11	Door	200 000	80 kg
12	Door	200 000	100 kg
13	Door	200 000	120 kg
14	Door	200 000	160 kg

## • EXAMPLE

Example: the following marking denotes a single-axis hinge for use in medium duty situations, tested to 200 000 cycles, for use on doors with a mass up to 60 kg, with stated fire door suitability, satisfying the essential requirement of safety in use, high corrosion resistance, suitable for burglar-resistant doors and with a hinge grading of 10.



## • MARKING

Each single-axis hinge manufactured to this European standard must be marked with the following:

- (a) manufacturer's name or trademark, or other means of identification.
- (b) the hinge grade (eighth digit of classification code).
- (d) number of this European standard.

Note: This information can be in coded form

## • CE MARKING

Single axis hinges intended for use on fire resisting doors and smoke control doors are covered by a Construction Products Directive mandate issued by the European Commission. Consequently, this standard is regarded as a "harmonised" standard and compliance with it, supported by suitable evidence, allows the application of the CE mark.

As fire/smoke door hinges have a critical safety function, application of the CE mark will require the involvement of a notified certification body to provide verification of the compliance claims. This will involve initial type-testing of the product to EN 1935, initial inspection of the manufacturer's factory production control and continuing surveillance and approval of the factory production control. On satisfactory completion of these tasks, the notified body issues an EC Certificate of Conformity which then permits the manufacturer to declare compliance and affix the CE marking to his product.

The standard requires the following additional information to accompany the CE marking:-

- the identification number of the notified certification body
- the name or identifying mark of the manufacturer
- the registered address of the manufacturer
- the last two digits of the year in which the marking was applied
- the number of the EC certificate of conformity
- reference to EN 1935:2002
- the classification code of the product

Note that, although the notified body has to be involved to verify the manufacturer's claims, the manufacturer remains responsible for designing and producing the product, for affixing the CE marking, and for ensuring that the product meets the requirements of the Directive.

British standards can be obtained from  
BSI Customer Services,  
389 Chiswick High Road, London W4 4AL  
Tel: +44 (0)20 8996 9001  
E-mail: [cservices@bsi-global.com](mailto:cservices@bsi-global.com)

## Additional important considerations

In addition to ensuring that products satisfy the requirements of this standard, other factors should be taken into consideration when selecting hinges. 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 hinges 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 1935. 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 1935 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 1935 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.

## DHF PROFILE

The Door and Hardware Federation (DHF) was created by a merger between the Association of Building Hardware Manufacturers (ABHM) and the Door and Shutter Manufacturers Association (DSMA), both of which have established excellent reputations in their respective industries, particularly in the area of technical expertise and the development of performance standards in national and international arenas.

The DHF aims to build on these reputations by exploiting the synergies that exist between the two associations and combining their technical and financial resources to provide a unified, authoritative voice for the entire industry.

The DHF and its members have consistently risen to the challenges posed by an ever-changing market, 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 products with confidence.

The federation now represents the interests of manufacturers and installers of industrial, pedestrian and garage doors as well as manufacturers of locks and building hardware. It provides professionals in all sectors of the building industry with a single source for technical expertise and creates a more powerful and representative lobbying force, with the ultimate aim of assuring progress and maintaining standards throughout the industry.

### 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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