

# Fire extinguishing installations and equipment on premises —

**Part 3: Code of practice for the  
inspection and maintenance of  
portable fire extinguishers**

ICS 13.220.10

## Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee FSH/2, Fire extinguishers, upon which the following bodies were represented:

Association of British Fire Trades  
 Association of Metropolitan Authorities  
 British Aerosol Manufacturers Association  
 British Fire Consortium  
 Building Research Establishment  
 Building Research Establishment (LPC Laboratories)  
 Chief and Assistant Chief Fire Officers Association  
 Civil Aviation Authority  
 Consumer Policy Committee of British Standards Institution  
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 Health and Safety Executive  
 Home Office  
 Independent Fire Engineering and Distributors Association  
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 London Fire and Emergency Planning Authority  
 Ministry of Defence — UK Defence Standardization  
 Society of Motor Manufacturers and Traders Limited  
 Co-opted members

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 7 November 2003

© BSI 7 November 2003

First published February 1980  
 Second edition August 1985  
 Third edition October 2000  
 Fourth edition November 2003

### Amendments issued since publication

Amd. No.	Date	Comments

The following BSI references relate to the work on this British Standard:  
 Committee reference FSH/2  
 Draft for comment 01/541563 DC

ISBN 0 580 42865 6

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## Foreword

This part of BS 5306 has been prepared by Technical Committee FSH/2. It supersedes BS 5306-3:2000, which is withdrawn.

The other parts of BS 5306 published are as follows:

- *Part 0: Guide for selection of installed systems and other fire extinguishing equipment;*
- *Part 1: Hydrant systems, hose reels and foam inlets;*
- *Part 2: Specification for sprinkler systems;*
- *Part 4: Specification for carbon dioxide systems;*
- *Part 5: Halon systems:*
  - *Section 5.1: Specification for Halon 1301 total flooding systems;*
  - *Section 5.2: Specification for Halon 1211 total flooding systems;*
- *Part 6: Foam systems:*
  - *Section 6.1: Foam systems — Specification for low expansion foam systems;*
  - *Section 6.2: Foam systems — Specification for medium and high expansion foam systems;*
- *Part 7: Extinguishing powder systems;*
- *Part 8: Selection and installation of portable fire extinguishers.*

Recommendations cover the reporting procedures for the inspection and maintenance of portable fire extinguishers, since it is important not only that extinguishers are, but are also known to be, serviced. The advice as to the action to be taken when a portable fire extinguisher is found to be defective has been augmented in this revision.

The advice given on the maintenance of halon extinguishers in this revision of BS 5306-3 has been updated to take account of the implementation of EC Regulation No. 2037/2000 [1], which was introduced following amendments to the Montreal Protocol during the 1990s. This Regulation prohibits possession of a halon portable fire extinguisher after 31 December 2003, unless it is for a “critical use” as defined in the Regulation.

As a code of practice, this British Standard takes the form of guidance and recommendations. It should not be quoted as if it were a specification, and particular care should be taken to ensure that claims of compliance are not misleading.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

### **Compliance with a British Standard does not of itself confer immunity from legal obligations.**

In particular, attention is drawn to the following statutory regulations.

- The Fire Precautions (Workplace) Regulations 1997, as amended [2].
- The Fire Precautions (Workplace) Regulations (Northern Ireland) 2001 [3].
- The Pressure Systems Safety Regulations 2000 [4].
- The Transportable Pressure Vessels Regulations 2001 [5].
- The Environmental Protection (Controls on Ozone-Depleting Substances) Regulations 2002 [6].
- The Environmental Protection (Controls on Ozone-Depleting Substances) (Northern Ireland) Regulations 2003 [7].
- The Health and Safety at Work Act etc. 1974 [8].
- The Management of Health and Safety at Work Regulations 1999 [9].

### **Summary of pages**

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 15 and a back cover.

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## 1 Scope

This part of BS 5306 provides schedules for the maintenance of portable fire extinguishers installed in all locations. It also includes recommendations for handling certain obsolescent types of extinguishers, for which no maintenance schedules are provided.

Additionally, the standard recommends the detailed actions for three levels of maintenance: basic service, extended service and overhaul procedures.

The standard is not applicable to halon 1301 extinguishers.

NOTE Maintenance schedules are given in Annex A, Annex B, Annex C and Annex D. Annex E gives recommendations for the training of competent persons. An account of the law relating to the possession and use of halon fire extinguishers is given in Annex F. Annex G gives information about extinguishers manufactured in accordance with British Standards which have been withdrawn.

## 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 5306-8:2000, *Fire extinguishing installations and equipment on premises — Part 8: Selection and installation of portable fire extinguishers — Code of practice.*

BS 6643-1, *Recharging fire extinguishers (manufactured to BS 5423, 'Specification for portable fire extinguishers' — Part 1: Specification for procedure and materials.*

BS 7863:1996, *Recommendations for colour coding to indicate the extinguishing media contained in portable fire extinguishers.*

BS EN 3 (all parts), *Portable fire extinguishers.*

BS EN 1802, *Transportable gas cylinders — Periodic inspection and testing of seamless aluminium alloy gas cylinders.*

BS EN 1803, *Transportable gas cylinders — Periodic inspection and testing of welded carbon steel gas cylinders.*

BS EN 1968, *Transportable gas cylinders — Periodic inspection and testing of seamless steel gas cylinders.*

BS EN 25923, *Fire protection — Fire extinguishing media — Carbon dioxide.*

BS EN 27201-1, *Fire protection — Fire extinguishing media — Halogenated hydrocarbons — Part 1: Specifications for halon 1211 and halon 1301.*

## 3 Terms and definitions

For the purposes of this part of BS 5306 the terms and definitions given in BS EN 3 and the following apply.

### 3.1

#### **additive**

chemical added to an extinguishing medium for such purposes as corrosion inhibition, freezing point depression, penetration, enhanced wetting and film or coating formation

### 3.2

#### **body**

shell of an extinguisher or gas cartridge, excluding its accessories but including its welded parts

### 3.3

#### **body fittings**

those parts of an extinguisher that, under normal working conditions, are permanently attached to the body shell and are subjected to the working pressure

### 3.4

#### **body shell**

outer case of an extinguisher

NOTE The body shell usually comprises a cylindrical case with dished ends, and apertures which are fitted with components such as nozzles, pressure gauges and closures.

### 3.5

#### **charge**

mass or volume of extinguishing medium contained in an extinguisher

NOTE The charge of a water-based medium is expressed as a volume in litres. Charges for other media are expressed as a mass in kilograms.

### 3.6

#### **chemical foam extinguisher**

extinguisher from which foam is expelled when chemical solutions stored separately within the body of the extinguisher are allowed to mix and react on the actuation of the operating mechanism

NOTE Chemical foam extinguishers are obsolescent and are distinguished from the water-based foam fire extinguishers covered by the maintenance schedules in this standard.

### 3.7

#### **competent person**

person with the necessary training and experience, with access to the relevant tools, equipment and information, manuals and knowledge of any special procedures recommended by the manufacturer of the extinguisher, to carry out the relevant maintenance procedures

### 3.8

#### **extinguishing medium**

substance contained in an extinguisher which causes extinction of a fire

### 3.9

#### **gas cartridge**

pressure container that fits into, or is attached to, an extinguisher and that contains an expellant gas that, on operation of the extinguisher, expels the extinguishing medium

### 3.10

#### **gas cartridge extinguisher**

extinguisher from which the extinguishing medium is expelled, on the actuation of the operating mechanism, by pressure released from a gas cartridge

### 3.11

#### **portable fire extinguisher**

extinguisher which is designed to be carried and operated by hand and which, in working order, has a mass of not more than 20 kg

NOTE Hereinafter referred to as an "extinguisher".

### 3.12

#### **primary sealed stored pressure extinguisher**

stored pressure extinguisher in which the operating head and the valves controlling the flow of extinguishing medium during discharge can be detached from the body of the extinguisher without releasing propellant or medium, which are retained in the body by a closure that is ruptured on operation

### 3.13

#### **recharging**

maintenance procedure carried out after complete or partial discharge of an extinguisher, or as part of a scheduled maintenance procedure, to restore the extinguisher to its full operational condition

**3.14****soda acid extinguisher**

extinguisher from which water is expelled by pressure resulting from an acid and/or alkali reaction in the contents of the extinguisher on the actuation of the operating mechanism

NOTE Soda acid extinguishers are obsolescent.

**3.15****stored pressure extinguisher**

extinguisher from which the extinguishing medium is expelled, on the actuation of the operating mechanism, by pressure stored within the body

**3.16****test discharge**

discharge of extinguishing medium under controlled conditions by, or under the supervision of, a competent person to check the continued serviceability of an extinguisher

**3.17****user**

person or persons responsible for, or having effective control over, fire safety provisions adopted in or appropriate to the premises or building or risk where an extinguisher is installed

**3.18****valve operated stored pressure extinguisher**

stored pressure extinguisher in which a single valve serves both to retain the propellant and extinguishing medium before operation of the extinguisher, and to control the flow of extinguishing medium during discharge

**4 Inspection by the user**

It is recommended that regular visual inspections of all extinguishers be carried out by the user or user's representative. The frequency of inspections by the user should be not less than monthly and, when circumstances require, inspections should be carried out more frequently.

NOTE 1 The *Fire Safety: An Employers Guide* [10] information leaflet for employers, which is published for the Home Office as guidance for operating within the Fire Precautions (Workplace) Regulations [2] and [3], suggests that good practice is to determine whether the extinguisher has been operated and to check for damage on a weekly basis.

Inspections should include checks that:

- a) each extinguisher is located in the designated place;
- b) each extinguisher is unobstructed and visible;
- c) the operating instructions of each extinguisher are clean and legible and face outwards;
- d) each extinguisher has not been operated and is not obviously damaged;
- e) the reading of any pressure gauge or indicator fitted to an extinguisher is within operational and safety limits;
- f) the seals and tamper indicators of each extinguisher are not broken or missing.

The user should arrange for corrective action, where necessary.

NOTE 2 Employers in charge of a workplace have obligations under the Fire Precautions (Workplace) Regulations [2] and [3]. Regulation 6 requires that, where it is necessary to provide extinguishing equipment to safeguard employees in the event of fire, this equipment has to be maintained in an efficient state, in efficient working order and in good repair.

## **5 Basic service, extended service and overhaul**

### **5.1 General**

The user should ensure that extinguishers, along with any spare gas cartridges and replacement charges, are maintained regularly. Basic service, extended service and overhaul should be carried out at the intervals recommended in Annex A, in accordance with Annex B, Annex C or Annex D, respectively. The Management of Health and Safety at Work Regulations 1999 [9] require this to be done by a competent person.

### **5.2 Maintenance records**

A maintenance record should be kept of the basic and extended maintenance performed. The maintenance record should be indelibly marked on a durable label that is fixed firmly to the extinguisher without obscuring any of the manufacturer's markings and instructions. Where there is no more space on the maintenance label and a new label is fixed, the date of the last extended service should be marked on the new label.

The following information should be given on the maintenance label:

- a) type of maintenance (basic service, extended service, recharge, overhaul);
- b) name and address of the maintenance supplier;
- c) a mark clearly identifying the competent person;
- d) the date (year and month) of the maintenance;
- e) the measured mass of the extinguisher, if it is a stored pressure extinguisher or cartridge-operated powder extinguisher;
- f) the date (year and month) of any overhaul.

NOTE 1 It might also be appropriate to mark the year and month of the next maintenance.

The information recommended in items a) to f) should be readable without any special equipment. Any additional information for the benefit of competent persons may be shown in a more compact form, such as bar codes.

NOTE 2 The information on the maintenance label of each extinguisher may also be entered into a central record. In this way one aspect of the important information on fire prevention can be kept readily available.

## **6 Recharging of extinguishers**

### **6.1 Procedure**

The procedures specified in BS 6643-1 and Annex B, and those detailed by the extinguisher manufacturer, should be followed. Before recharging, water-based extinguishers (including foam extinguishers) should be thoroughly washed out with clean water, but on no account should this procedure be applied to powder, halon or carbon dioxide extinguishers, which have to be kept completely free from water. Following the manufacturer's instructions supplied with the extinguisher, or any additional advice obtained from the extinguisher manufacturer, the competent person should decide whether to re-use the extinguishing medium.

Refill charges recommended by the extinguisher manufacturer should be used for water-based and powder extinguishers, but for halon and carbon dioxide extinguishers equivalent charges may be used. An equivalent charge is one that has been shown by test results to achieve the fire extinction rating claimed for the original charge. For halon and CO<sub>2</sub> extinguishers, only halons conforming to BS EN 27201-1 and carbon dioxide conforming to BS EN 25923 should be used.

NOTE Under EC Regulation No. 2037/2000 [1] the use of halons as extinguishing media is restricted to a limited number of "critical uses" (see Annex F).

When an extinguisher has been recharged for any reason, the date of recharging should be recorded on the extinguisher's maintenance label attached to the extinguisher (see 5.2).



## 6.2 Gas cartridges

Replacement gas cartridges for water, water-based (including foam) and powder extinguishers should conform to BS EN 3-3:1996, Clause 9. If the extinguisher was originally made to BS 5423, then cartridges conforming to BS 5423 may be used.

NOTE 1 BS EN 3-3, Clause 9, is due to be superseded by BS EN 3-8, which is currently being drafted.

NOTE 2 Errors can occur where cartridges are supplied with different charges of propellant for use in different extinguishers. Another source of error is the use of a superficially identical replacement cartridge, which fits the extinguisher but has significant dimensional differences that make it incapable of operating.

NOTE 3 Cartridges with contents of 90 g and over are subject to the requirements of the Transportable Pressure Equipment Directive [11]. The European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) [12] specifies the periods of hydraulic testing. For CO<sub>2</sub> cartridges, this has to be carried out 10 years from the date of manufacture, with further hydraulic tests at 10-yearly intervals thereafter.

Cartridges with contents of less than 90 g should be hydraulically tested in accordance with BS EN 1802 and BS EN 1968.

A cartridge should not be recharged if more than 10 years have elapsed since the date of manufacture or the most recent periodic hydraulic test, or if the date of the last test is not marked on the cartridge.

## 7 Replacement of components and extinguishing media

Only the components and extinguishing media supplied or specified by the manufacturer of the extinguisher, or equivalents, should be used to replace those found to be unsuitable for continued service.

NOTE The recharging of an extinguisher, or the replacement of any of its components, can be detrimental to the performance of the extinguisher.

## 8 Evaluation of fitness for service of extinguishers and actions to be taken

### 8.1 General

Defective extinguishers should be placed in one of the following categories: "Condemned" or "Not maintained".

### 8.2 Extinguishers which are required to be condemned

#### 8.2.1 General

Any extinguisher with a major defect or defects which make it unsafe for use or unfit for service, and which cannot be rectified during maintenance, should immediately be made safe and be removed from its designated place and marked "CONDEMNED", together with a note giving the reason for this assessment. The user of the premises should be advised in the written report (see 8.4.1) that a permanent replacement is needed as soon as possible. Evaluation of whether the damage, wear or corrosion an extinguisher has undergone make it unsafe for use or unfit for service depends on the judgement of the competent person. The competent person should have training and experience with the particular model of extinguisher.

Non-exhaustive lists of examples of the conditions that might affect the function or safety of an extinguisher are given in 8.2.2 and 8.2.3. A list of conditions that do not affect the function or safety of an extinguisher is provided by 8.2.4.

#### 8.2.2 Conditions indicating that an extinguisher is unsafe for use

Potentially the most serious hazard presented by a defective extinguisher is the sudden uncontrolled release of pressure or ejection of parts. This could be caused by any of the following conditions:

- a) corrosion, wear or damage to threads of any pressure retaining part;
- b) corrosion of welds;
- c) extensive general corrosion or severe pitting;
- d) significant dents or gouges in the body;
- e) fire damage to the body or body fittings.

### **8.2.3 Conditions indicating that an extinguisher is unfit for service**

An extinguisher may be considered unfit for continued service because damage or corrosion is likely to become worse and make the extinguisher unsafe to use. This could be caused by the following progressive conditions:

- a) any split in a plastics lining, or any significant bubbling or lifting from the metal of a plastics lining;
- b) corrosion of the metal body under a plastics lining;
- c) corrosion of the metal body under a zinc or tin/lead lining.

### **8.2.4 Conditions not affecting the function or safety of an extinguisher**

The following conditions do not affect the functioning or safety of an extinguisher and will not therefore require the extinguisher to be condemned:

- a) staining or discoloration of linings or diptubes;
- b) external blemishes or slight scratches;
- c) light rusting of parts which is not likely to impair function or safety;
- d) the presence of corrosion products from any metal lining (typically white salts of zinc, or tin and lead);
- e) minor bubbling, or lifting from the metal, of a plastics lining.

## **8.3 Extinguishers which are not maintained**

### **8.3.1 Action in the case of extinguishers which are not maintained because spare parts are unavailable**

When undertaking maintenance in a particular location, the competent person should ensure that they have available the number and types of spare parts that might be required to service the extinguishers involved (see Clause 7). If required spare parts are not available for any of these, the maintenance should be interrupted and the extinguisher made safe, removed from its designated place and marked "NOT MAINTAINED", together with a note giving the reason for this assessment. The competent person should return to the site with the spare parts and complete the maintenance, or, if the parts prove to be unobtainable, mark the extinguisher "CONDEMNED".

### **8.3.2 Action in the case of extinguishers which are not maintained because the user refuses to authorise full maintenance**

When the user of the building will not authorise the completion of all necessary elements of the maintenance of an extinguisher, for example, removal from a wall fixing or test discharging or replacement of components, some faults might remain undetected or uncorrected. Maintenance in accordance with this standard cannot be completed in these circumstances and this fact should be recorded by marking the extinguisher, "NOT MAINTAINED", together with a note giving the reason for this assessment. The exact instructions of the user should also be recorded by the competent person in the written report (see 8.4.1), under a heading "Authorisation for full maintenance refused".

### **8.3.3 Action in the case of extinguishers for which this standard provides no maintenance schedules**

Maintenance schedules for certain extinguishers (because of their type, construction, method of operation, or condition) are not provided in this standard. Examples of such extinguishers are as follows:

- chemical foam extinguishers;
- soda acid extinguishers;
- extinguishers with a riveted body shell;
- extinguishers with a plastics body shell;
- extinguishers that require inversion to operate;
- non-refillable extinguishers that have reached their expiry date.

Any such extinguisher should be marked "NOT MAINTAINED", and the competent person should advise the user, in a written report (see 8.4.1), that the extinguisher has not been maintained and that it should be replaced by an extinguisher for which this standard provides a maintenance schedule.

## 8.4 Further actions

### 8.4.1 *Provision of a written report*

The competent person should advise the user, in a written report, if extinguishers have not been maintained.

The report should also advise the user of the estimated reduction in protection which has resulted from the removal of portable extinguishers which cannot be immediately replaced and the user's obligation under the Fire Precautions (Workplace) Regulations [2] and [3] to provide an "appropriate" level of fire-fighting equipment at all times.

NOTE See BS 5306-8 for guidelines on the installation and provision of extinguishers.

If the number of extinguishers has been temporarily reduced, the report should advise the user or the user's representative that increased fire safety precautions will be required in the area affected until the restoration of the number and type of extinguishers accepted by the enforcing authorities.

For extinguishers for which this standard provides no maintenance schedule (see 8.3.3), the competent person should advise the user, in the written report, that these have not been maintained and that they should be replaced by extinguishers for which this standard provides a maintenance schedule.

### 8.4.2 *Temporary replacement of extinguishers*

If extinguishers are removed from a particular area during maintenance, sufficient extinguishers should remain in the area to ensure compliance with any fire risk assessment or the minimum recommendations of BS 5306-8. Where necessary, the competent person should advise the user that temporary replacement extinguishers are required. It is important that temporary replacement extinguishers should have similar means of operation to those that cannot be maintained (see BS 5306-8:2000, 4.4).

### 8.4.3 *Permanent replacement of extinguishers*

It is the responsibility of the user to arrange for permanent replacement extinguishers to be put into place as soon as possible after inspection has shown that some extinguishers should be replaced. The competent person is responsible for bringing this duty to the user's attention in the written report (see 8.4.1).

## Annex A (normative)

### Schedule of maintenance intervals

Maintenance procedures should be carried out at intervals no greater than those given in Table A.1.

**Table A.1 — Maximum maintenance intervals**

Type of extinguisher	Basic service (see Annex B) (see Note 1)	Extended service and recharging if necessary (see Annex C) (see Note 2)	Overhaul and recharging (see Annex D) (see Note 2)
Water, foam, and water based	Every year	Every 5 years	—
Powder	Every year	Every 5 years	—
Powder-primary sealed	Every year	Every 10 years (see Note 3)	—
Halon (see Note 4)	Every year	—	Every 10 years
CO <sub>2</sub>	Every year	—	Every 10 years

NOTE 1 The intervals should be taken from the date of installation or the last service. However, for CO<sub>2</sub> extinguishers, BS EN 1802:2002 (Clause 5), BS EN 1803:2002 (Clause 5), and BS EN 1968:2002 (Clause 5) require that the stamped date of manufacture be used. The intervals may be shortened, on the recommendation of the competent person where inspection reveals environmental and/or special hazards, or at the request of the user.

NOTE 2 The replacement of parts does not affect these intervals. For example, if the hose of a water-based extinguisher is replaced after the extinguisher has been in service for 6 years from installation then the extended service should be carried out after a further 4 years.

NOTE 3 Primary sealed stored pressure extinguishers should be returned to the manufacturer/supplier for recharging.

NOTE 4 Service of this type of extinguisher may only be carried out if the extinguisher meets the criteria of the “critical uses” in Annex VII of EC Regulation 2037/2000 [1] (see Annex F).

## Annex B (normative)

### General basic service procedures

#### B.1 Action sequences for general basic services

The maintenance supplier should arrange for the appropriate service procedures for the different types of extinguisher listed in the action sequences in Table B.1 to be carried out by a competent person at the intervals recommended in Table A.1, taking the safety precautions recommended in B.2.

Table B.1 shows the numbered sequence, from start to finish (left to right), of actions necessary to perform a basic service on the main types of extinguisher. Each action may be composed of one or more operations or inspections, and the details of each action are described in Table B.2, Table B.3, Table B.4 and Table B.5. It is not necessary, or possible, to perform every action listed in these four tables on every type of extinguisher.

#### B.2 Safety precautions for general basic services

NOTE Attention is drawn to the Health and Safety at Work Act 1974 [8], the Management of Health and Safety at Work Regulations [9] and the Fire Precautions (Workplace) Regulations [2] and [3].

##### B.2.1 Precautions for opening extinguishers

When opening any extinguisher, the competent person should:

- ensure that there is no residual pressure in any hose and/or nozzle assembly; then
- unscrew the head cap or valve assembly slowly for two or three turns only, to allow any residual pressure to escape via the venting arrangement, and should not unscrew it further until all pressure is released.

If there is no gradual release of pressure after unscrewing the head or valve assembly two or three turns, it should not be unscrewed further without taking appropriate safety precautions, for example, using suitable clamping arrangements and appropriate personal protection. Any sudden release of pressure might eject parts or the contents of the extinguisher, so the competent person should be absolutely certain that any pressure within the body does not exceed atmospheric pressure.

**WARNING** At all times, when attempting to remove parts from extinguishers, competent persons should ensure that they are clear of any parts which might be ejected. Under no circumstances should any attempt be made to remove the valves of carbon dioxide extinguishers or other high-pressure extinguishers or cartridges under field conditions.

**NOTE** Other methods of retaining head caps are possible. Reference should be made to the manufacturer's instructions for safety precautions.

### **B.2.2 Precautions for opening and charging powder extinguishers**

Before any powder extinguisher is opened it should be ascertained that, during inspection and maintenance, the precautions described in this subclause can be and will be observed.

Only extinguishers containing the same type of powder should be opened and examined at any one time.

It is especially important that mixing or cross contamination of different types of powder be avoided. Some mixtures can react, sometimes after a long delay, producing water and carbon dioxide with consequent caking of the dry powder and, in closed containers, a pressure rise. This rise in pressure could cause the extinguisher to explode.

Powder extinguishers should be opened only in dry conditions, and for the minimum time necessary for examination, to minimize the effect of atmospheric moisture on the powder.

Powder can absorb deleterious amounts of moisture if exposed to air of high relative humidity, or if the powder is colder than the ambient air. Powder refills should only be opened immediately before use, and bulk refills should be resealed immediately after use, to reduce the possibility of contamination or absorption of moisture from the atmosphere.

Re-using powder should be avoided as re-used powder can eventually become lumpy and interrupt the flow of powder when the extinguisher is operated (see BS 6643-1).

When using filling machines, particularly pneumatic types, care should be taken that powder is not trapped, for example on filters, and subsequently released to cause contamination of other powder. In addition, each filling machine should be used with only one type of powder.

**Table B.1 — Sequence of actions for general basic service procedures for extinguishers**

Extinguisher type	Sequence of actions <sup>a</sup>
<b>Stored pressure</b> Water, water-based (including foam), powder, halon and primary sealed powder	1, 2, 3, 4, 5, 6, 11, 12, 14, 18, 19, 20, 21
<b>Carbon dioxide</b>	1, 3, 4, 5, 6, 11, 12, 14, 18, 19, 20, 21
<b>Cartridge operated</b> Water and water-based (including foam) Powder	1, 3, 5, 6, 7, 8, 10, 12, 13, 14, 15, 17, 18, 19, 20, 21 1, 3, 4, 5, 6, 7, 9, 10, 12, 13, 14, 16, 18, 19, 20, 21
<sup>a</sup> The numbers refer to actions detailed in Table B.2, Table B.3, Table B.4 and Table B.5.	

Table B.2 — Basic service actions — Initial operations

Action No.	Component and/or action	Procedure
1	Safety clip and indicating devices	Check the safety clip and indicating devices to determine whether the extinguisher has been operated.
2	Pressure-indicating devices	Check the pressure-indicating device where fitted. If it is not operating freely or if the indicated pressure is outside the specified limits, refer to the instructions of the extinguisher manufacturer to ascertain the appropriate action to be taken. Check that any dust covers needed on pressure-indicating or pressure-relief devices are in place. Where a pressure-indicating device is not fitted verify, by means of the connection provided for this purpose, that the internal pressure is correct. If it is not correct refer to the instructions of the extinguisher manufacturer to ascertain the appropriate action to be taken.
3	External examination	Examine the exterior for corrosion, dents, gouges or damage that could impair the safe operation of the extinguisher (see Clause 8).
4	Weight check	Weigh the extinguisher according to the instructions of the extinguisher manufacturer (in the case of a CO <sub>2</sub> extinguisher, weigh after removal of the discharge horn/hose assembly), check the mass against that recorded when first put into service or when last recharged, and record this on the maintenance label (see Clause 5.2). In the event of a loss of content of more than 10 %, discharge and recharge according to B.2.2, 6.1 and Clause 7.
5	Hose and nozzle	Check the condition and fitness for use of the discharge nozzle and hose, and ensure that the nozzle and hose, if fitted, are not obstructed, cracked, worn, or damaged. Replace with a new nozzle and/or hose if necessary.
6	Operating instructions	Check the operating instructions for correctness and legibility.
7	Opening a gas cartridge extinguisher	Open the extinguisher by unscrewing the head cap, and remove the gas cartridge.

Table B.3 — Basic service actions — Charge operations

Action no.	Component and/or action	Procedure
8	Water, water-based, and foam charges	Pour the original charge into a clean container and, if it is to be reused, check it in accordance with the instructions of the extinguisher manufacturer. Where the additive is in a separate container, remove this container and check it for leakage. If the container has been leaking, discard the container and charge. Rinse out the body before charging.
9	Powder charges	Examine the powder of the extinguisher. Agitate the powder by inverting and shaking the extinguisher, taking care to avoid spillage. If there is any evidence of caking, lumps, or foreign bodies, or if the powder is not free flowing, or if there is any doubt at all about the condition of the powder, discard all the powder and recharge in accordance with B.2.2. The use of sieves or machines to remove foreign bodies or caked or lumpy material is not recommended since this will involve considerable exposure of the powder to atmospheric humidity with a risk of subsequent caking.

**Table B.4 — Basic service actions — Internal operations**

Action No.	Component and/or action	Procedure
10	Operating mechanism and air passages	Clean if necessary and pass air through the air passages, paying particular attention to the vent holes (or other venting device) in the head cap. Check that the strainer (where fitted), internal discharge tube and breather valve (where fitted) are unobstructed. Rectify any problems or replace with a new tube or valve if necessary.  Check the operating mechanism and discharge control (where fitted) for free movement. Rectify any problems or replace with a new operating mechanism or discharge control as necessary. Protect moving parts and threads against corrosion with a lubricant as recommended by the extinguisher manufacturer.
11	Removable operating mechanism	Where the extinguisher is designed to have the operating mechanism removed, remove and check the operating mechanism and discharge control (where fitted) for free movement. Clean, lubricate, rectify any problems, or replace with a new operating mechanism as necessary.
12	Safety pin	Remove the safety pin and check that the operating lever is undamaged. Safety precautions should be taken to avoid inadvertent operation. Return the safety pin or, where necessary, a replacement pin to the extinguisher.
13	Gas cartridge	Examine the gas cartridge externally for corrosion or damage. If the gas cartridge has suffered mechanical damage or is corroded replace as recommended by the extinguisher supplier (see also <b>6.2</b> ).  Weigh the gas cartridge and check the mass against that marked on the gas cartridge. If the gas cartridge has sustained a loss of content greater than 10 % of the original content, withdraw it from service and replace it with a gas cartridge as recommended by the extinguisher manufacturer. Check the date marked on the cartridge (see <b>6.2</b> ).
14	Seals for the discharge horn, hose, nozzle, valve body and hose diaphragm	The seals for the discharge horn, the hose, the nozzle and the valve body should be replaced with new seals when these components are removed from the extinguisher. If the hose is fitted with a diaphragm, this should always be replaced with a new diaphragm.
15	Body: water, water-based and foam	Examine the interior with the aid of an inspection light. Check for corrosion or lining deterioration. Check separate containers for additives and replace if they are leaking or damaged.
16	Body: powder	Examine the interior with the aid of an inspection light. Check for corrosion and deterioration of lining, if fitted.

Table B.5 — Basic service actions — Final operations

Action No.	Component and/or action	Procedure
17	Water and water-based (including foam) charges	Return the original charge to the extinguisher, or replace with new charge according the instructions of the extinguisher manufacturer.
18	Reassembly	Reassemble the extinguisher in accordance with the instructions of the extinguisher manufacturer. Replace with new any safety element designed to show whether the extinguisher has been operated.
19	Maintenance label	Complete the details on the maintenance label as recommended in <b>5.2</b> .
20	Mounting bracket/stand	Check any mounting bracket or stand if accessible and rectify any problems.
21	Report	Write an inspection report advising the user of the state of maintenance of the extinguisher (see <b>8.4.1</b> ).



## Annex C (normative)

### Extended service procedures

The maintenance supplier should arrange for the extended service procedures given in Table C.1, together with the appropriate basic service procedures given in Annex B, to be carried out by a competent person.

**Table C.1 — Extended service procedures**

Action No.	Procedure
1	Perform the test discharge on the extinguisher.
2	Examine the body internally and in detail for corrosion, dents, cuts, gouges or lining damage (see Clause 8). Pay special attention to the welds. Follow the instructions of the extinguisher manufacturer where there are any doubts about the welds.
3	Examine and check all closures for thread wear, damage and corrosion as applicable (see Clause 8).
4	To return it to operational condition, reassemble and recharge the extinguisher in accordance with the instructions of the extinguisher manufacturer.
NOTE The precautions described in B.2.2 should be taken when handling a powder charged extinguisher.	

## Annex D (normative)

### Overhaul, including periodic inspection and test procedures for CO<sub>2</sub> and halon extinguishers

The maintenance supplier should arrange for the overhaul procedures given in Table D.1, together with the procedures in Table B.1 and Table C.1, to be carried out by a competent person. The requirements for the periodic inspection and testing of CO<sub>2</sub> and halon types of portable extinguishers are specified in BS EN 1802, BS EN 1803 and BS EN 1968, depending on the construction of the extinguisher body. These are the only types of extinguishers that are not excluded from the Pressure Systems Safety Regulations 1999 [4]. The intervals recommended in Table A.1 are expected to be acceptable as representing general good practice for schemes of examination for extinguishers under these Regulations.

**Table D.1 — Overhaul procedures for carbon dioxide (CO<sub>2</sub>) and halon extinguishers**

Action No.	Procedure
1	Discharge the extinguisher if it is the CO <sub>2</sub> type or empty if it is a halon extinguisher. For a CO <sub>2</sub> extinguisher, remove the swivel horn/hose assembly, the valve and the valve assembly, and remove the diptube from the valve assembly. Destroy the valve. For a halon extinguisher, strip the components down completely.
2	For a CO <sub>2</sub> extinguisher, pressure-test the body shell in accordance with the test pressure indicated on the body. Do not overhaul the body if it is unmarked. Permanently mark the body shell with the retest date and the identification of the organization performing the test.
3	Render removed head caps/valves unusable and replace these with new head caps/valves.
4	Reassemble and recharge the extinguisher.

## Annex E (informative)

### Training of competent persons

The competent person's training should include "on the job" experience and attendance of a training course run by a recognised body, which may be the extinguisher supplier or a qualified company. The competent person should attend for the length of time recommended by the training institution and, at the end of the course, pass an examination supervised by an independent body<sup>1)</sup>.

<sup>1)</sup> There are three such independent examination bodies recognised by British Approvals for Fire Equipment: the British Fire Consortium (BFC), the Fire Extinguishing Trades Association (FETA) and the Independent Fire Engineering and Distributors Association (IFEDA).

The competent person should attend a refresher course at least every three years, which satisfies the following criteria.

- a) Minimum duration one day.
- b) Covers new requirements, new classes of fires and new products in the market place, such as:
  - 1) British Standards;
  - 2) relevant UK statutory regulations;
  - 3) basic services;
  - 4) extended services;
  - 5) recharging;
  - 6) overhauling.
- c) Concludes with a written test of understanding for the competent person.

## **Annex F (informative)**

### **Halon extinguishers**

#### **F.1 Halon manufacture**

Under the 1987 Montreal Protocol on substances that deplete the ozone layer, the production of halons identified as ozone depleting compounds was banned. This ban was implemented and enforced in the European Community through EC Regulation No. 3093/94 [13], which prohibits the production of halons, and controls their supply and use. The use of halon 1211 and 1301 is restricted to the “critical uses” listed by Annex VII to EC No. 3093/94 [13].

#### **F.2 Withdrawal of halon extinguishers**

Amendments to the Montreal Protocol during the 1990s, along with the increased availability of technologies for replacing ozone-depleting substances, led to the introduction of control measures stricter than those imposed by EC Regulation No. 3093/94 [13]. EC Regulation No. 2037/2000 [1] prohibits the placing on the market and use of halons and of products and equipment containing halons, except for the “critical uses” listed in Annex VII of this Regulation. This was implemented in the United Kingdom by The Environmental Protection (Controls on Ozone-Depleting Substances) Regulations 2002 [6] and The Environmental Protection (Controls on Ozone-Depleting Substances) (Northern Ireland) Regulations 2003 [7]. After 31 December 2002 it became an offence to supply halons that have been recovered, recycled or reclaimed in existing extinguishers, and after 31 December 2003 it will be an offence to possess a halon extinguisher, unless this is for one of the “critical uses”.

#### **F.3 Withdrawn extinguishers**

Halon extinguishers withdrawn from service are required to be emptied in such a way that the halon is recovered, either for the limited possibility of re-use or for disposal by a non-contaminating method. To this end, they have to be sent to an authorised disposal agent with the facilities and expertise required to recover or destroy the halon. A list of authorised disposal agents is available from the Halon Users National Consortium (HUNC), Global House, College Street, Petersfield, Hampshire GU31 4AD; Tel: 01730 264040; email: [halon@hunc.org](mailto:halon@hunc.org); website: [www.hunc.org](http://www.hunc.org).

## **Annex G (informative)**

### **Extinguishers manufactured in accordance with withdrawn British Standards**

Extinguishers conforming to BS 740, BS 1382, BS 1721, BS 3326, BS 3465, BS 3709 (all of which were withdrawn in July 1980 and superseded by BS 5423) might still be found in service. Though these are now more than twenty years old they may still be accepted as part of the extinguisher provision for the premises provided that they can be returned to a serviceable state; that is, when inspected they do not fall within the categories covered in **8.2.2** and **8.2.3**.

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<sup>2)</sup> Available from HSE Books, PO Box 1999, Sudbury, Suffolk, CO10 2WA.

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