

Fans for general purposes —

Part 5: Guide for mechanical and electrical safety

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- British Coal
- British Steel Corporation
- British Steel Industry
- Department of Trade and Industry (National Engineering Laboratory)
- Electricity Supply Industry in England and Wales
- Engineering Equipment and Materials Users' Association
- Hevac Association
- Institution of Mechanical Engineers
- Ministry of Defence

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Foreword

This Part of BS 848 has been prepared under the direction of the Machinery and Components Standards Committee.

In preparing this standard account has been taken of BS 5304 “Code of practice for safeguarding machinery” and Draft Eurovent 1/3 Safety requirements for fans — Part 1: Mechanical protection against contact.

Attention is drawn to Appendix A which gives information on safety distances for fans.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 12, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Section 1. General

1 Scope

This Part of BS 848 provides guidance on mechanical and electrical safety aspects of fans connected to single-phase a.c., three-phase a.c., or d.c. supplies up to 660 V. It assumes that the fans covered by the scope of this standard are inherently safe by design, both mechanically and electrically. The standard identifies the circumstances under which safety measures should be taken and gives information on how safety hazards can be reduced or eliminated. The standard therefore deals with safety as it relates to the installer and user of fans. The standard does not apply to the transportation and handling of fans. Fans and fan appliances for household and similar applications are not covered by this standard; for such equipment reference should be made to BS 3456-2.29 and BS 4934.

NOTE The titles of the publications referred to in this standard are listed on the inside back cover.

2 Definitions

For the purposes of this British Standard the following definitions apply.

2.1

personal injury

hurt caused to or sustained by a person as a result of mechanical or electrical hazard

2.2

hazard

a situation which may give rise to personal injury

2.3

risk

the probability of a hazard leading to personal injury

2.4

danger

a state or condition in which there is a reasonable foreseeable risk of personal injury

2.5

danger point/area

a point or area at or near the fan where danger could occur

2.6

safeguard

a guard or device designed to protect persons from danger

2.7

guard

a physical barrier which prevents or reduces access to a danger point/area

2.8

safe working practice

a safe system of working which reduces the risk of injury

2.9

class I appliance

an appliance in which protection against electric shock does not rely on basic insulation only, but which includes provision for the connection of accessible conductive parts to the protective (earthing) conductor in the fixed wiring of the installation so that accessible conductive parts cannot become live in the event of a failure of the basic insulation

NOTE Class I appliances may have parts with double insulation, or parts operating at safety extra-low voltage.

3 Dangers from fans

A person may be injured by a fan as a result of:

- a) coming in contact with a moving part;
- b) being trapped between a moving and a stationary part, e.g. a fan and a casing;
- c) being trapped between two moving parts, e.g. a belt and a pulley;
- d) being drawn into the fan inlet by air movement resulting in contact with a rotating shaft or impeller;
- e) objects being drawn into the fan inlet and ejected at high velocity at the fan discharge or inlet;
- f) contact with surfaces of the fan where these are at extreme temperatures (i.e. less than -20°C and greater than $+40^{\circ}\text{C}$);
- g) structural failure of fan components;
- h) spontaneous combustion from dust/gas mixtures;
- i) leakage of toxic substances and inert gases.

NOTE Figure 1 illustrates typical mechanical hazards referred to in a) to d).

4 Principles of safeguarding

The basic principles for reducing risk of injury, which may be applied to fans, are:

- a) identification or knowledge of the hazard(s);
- b) elimination or avoidance of the hazard(s) (including measures to reduce the scale of possible injury);
- c) use of physical safeguards;
- d) use of safe working practices.

It is difficult to be certain that a fan is safe by virtue of its position, and where access and consequent injury is reasonably foreseeable, safeguards should be provided.

Certain safety measures are more reliable than others. The order of priority is determined by reliability and therefore safeguards should be considered before safe working practices.

5 Safe working practices

5.1 General

Recommendations on safe working practices are given in BS 5304. However, physical safeguards should be used wherever practicable, these being supplemented by the use of safe working practices where appropriate.

5.2 Installation, operation and maintenance instructions

The manufacturer's instructions with respect to maintenance of safeguards should be strictly followed.