

Specification for

**Installation of gas fires,
convector heaters, fire/back
boilers and decorative fuel
effect gas appliances**

**Part 1. Gas fires, convector heaters and
fire/back boilers (1st, 2nd and 3rd family
gases)**

ICS 97.100.20; 91.140.10

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Gas Standards Policy Committee (GSE/-) to Technical Committee GSE/30, upon which the following bodies were represented:

- British Flue and Chimney Manufacturers' Association
- British Gas plc
- Confederation for the Registration of Gas Installers
- Consumer Policy Committee of BSI
- Department of the Environment
- Department of Trade and Industry (Consumer Safety Unit, CA Division)
- Health and Safety Executive
- Institute of Domestic Heating and Environmental Engineers
- Institution of Gas Engineers
- Liquefied Petroleum Gas Industry Technical Association (UK)
- Society of British Gas Industries
- Trades Union Congress

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

- Decorative Gas Fire Manufacturers' Association
- Chartered Institution of Building Services Engineers

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Summary of pages

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a	1	7	original
b	blank	8	2
1 and 2	original	9 to 28	original
3	2	Inside back cover	original
4	original	Back cover	2

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Foreword

This Part of BS 5871 has been prepared under the direction of the Gas Standards Policy Committee and is a revision of BS 5871 : 1980 which is withdrawn.

This revision is based on the 1980 edition but now covers 1st and 3rd family gases in addition to 2nd family gases and gives requirements for installation.

The revision and restructuring of BS 5871 has been undertaken to reflect appliance developments which have taken place since BS 5871 was published in 1980. These include the wider application of fanned draught flueing, the introduction of condensing appliances, and an increase in the range of fuel effect appliances which burn gas so as to simulate a solid fuel fire. In the case of fuel effect appliances, the outward similarity in appearance between appliances, coupled with the diversity of terms used to describe them, has sometimes led to problems in identifying the relevant installation criteria. Against this background, BS 5871 has been split into Parts so as to include all fuel effect appliances in a single series of British Standards as follows.

BS 5871 : Part 1	Gas fires, convector heaters and fire/back boilers (1st, 2nd and 3rd family gases)
BS 5871 : Part 2	Inset live fuel effect gas fires of heat input not exceeding 15 kW (2nd and 3rd family gases)
BS 5871 : Part 3 ¹⁾	Decorative fuel effect gas appliances of heat input not exceeding 15 kW (2nd and 3rd family gases)

To identify which Part of BS 5871 to use when fitting an appliance which simulates a solid fuel fire, reference should be made to figure 1 which serves to illustrate appliance types and link them to the appropriate Part of BS 5871. It should be noted that the only fuel effect appliances covered by this Part of BS 5871 are gas fires detailed in (h) of the commentary and recommendations on 4.1 of this standard.

The manufacturer's instructions supplied with fanned draught appliances in which the fan is either integral with the appliance or with the flue system will make reference to the appropriate Part of BS 5871.

NOTE. In the preparation of this standard the opportunity has been taken to present it in the format of a practice specification as defined in PD 6501 : Part 1. This format allows the requirements of the specification to be supported by recommendations. To comply with this specification the user has to comply with all its requirements. He may depart from recommendations but this would be his own responsibility and he would be expected to have good reasons for doing so.

Compliance with a British Standard does not of itself confer immunity from legal obligations. In particular, attention is drawn to the following statutory regulations:

- (a) The Gas Safety (Installation and Use) Regulations (S.I. 1998 No. 2451).
- (b) The Gas Appliances (Safety) Regulations 1995 (S.I. 1629).
- (c) The Building Regulations 1991 (S.I. 1991 No. 2768 [as amended by S.I. 1994 No. 1850]).
- (d) The Building Standards (Scotland) Regulations 1990 (S.I. 2179) (as amended).
- (e) Building Regulations (Northern Ireland) (Statutory Rules of Northern Ireland 1994 No. 243).
- (f) The Gas Safety (Application) order 1996 (Isle of Man).

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.

¹⁾ Revision of BS 6714 : 1986.

Section 1. General

1 Scope

This Part of BS 5871 specifies the installation requirements for flued and flueless fixed space heating appliances burning 1st, 2nd and 3rd family gases for the purpose of heating rooms or spaces in domestic or commercial premises. These types of appliance are known as radiant gas fires, radiant convector gas fires and convector heaters. Convector heaters in the form of greenhouse heaters are only covered in respect of single appliance installations. Combined appliances of the type where a gas fire is used in conjunction with a boiler or circulator are also covered in so far as the installation of the combined appliance is concerned.

This standard covers the selection of a suitable appliance, the flueing and/or ventilation requirements, and other measures necessary to ensure a safe installation.

The central heating and/or hot water system connected to a combined appliance is not within the scope of this standard and reference should be made to BS 5449 and BS 5546 for this part of such an installation.

NOTE 1. Attention is drawn to the foreword concerning fuel effect appliances which burn gas so as to simulate a solid fuel fire. The only types of such appliance covered by this Part of BS 5871 are those detailed in (h) of the commentary and recommendations on 4.1 of this standard. Further guidance in this respect is given in figure 1.

NOTE 2. The titles of the publications referred to in this standard are listed on the inside back cover.

2 Definitions

For the purposes of this Part of BS 5871 the following definitions apply.

2.1 air vent

A non-adjustable purpose made grille allowing the passage of air.

2.2 back boiler

A water heating appliance designed to fit into a fireplace recess or builder's opening to provide domestic hot water and/or central heating.

2.3 back circulator

An appliance with a rated input not exceeding 8 kW, designed to fit into a fireplace recess or a builder's opening, primarily for the supply of domestic hot water.

2.4 balanced-flued appliance

A room-sealed appliance which draws its combustion air from a point adjacent to the point at which the combustion products are discharged, the inlet and outlet being so disposed that wind effects are substantially balanced.

2.5 builder's opening

The enclosure constructed by the builder to accommodate fireplace components.

2.6 closure plate

A non-combustible plate for closing off substantially a fireplace opening when installing a gas fire.

2.7 condensing appliance

An appliance designed to make use of the latent heat in the combustion products water vapour by condensing the water vapour within the appliance.

2.8 convector heater

A heater that discharges heated air only into the space in which it is installed.

2.9 cooler device

A device fitted at the spigot outlet of a gas fire to prevent localized overheating of a precast flue-block chimney.

2.10 dress-guard

A guard complying with BS 1945 and fitted to the front of and forming part of a gas fire.

2.11 fanned draught flue system

A flue system in which the draught is produced by a fan.

2.12 fireplace opening

The aperture formed in the face of the builder's opening, the fireplace recess, flue box or fire surround, if fitted.

2.13 fireplace recess

The recess formed by the inclusion of fireplace components in the builder's opening.

2.14 fire surround

A purpose-designed setting for a gas fire, fitted against a wall at the base of a flue and usually incorporating a hearth.

2.15 flue box

A non-combustible enclosure that provides a substitute builder's opening or fireplace recess.

2.16 flue spigot restrictor

A plate designed to be fitted to a flue spigot of a gas fire to reduce the effect of flue pull on the appliance.

2.17 gas fire

A flued appliance for heating one room and incorporating a radiating surface, either in the form of a radiant or an imitation fuel.

2.18 greenhouse heater

A flueless convector heater of not more than 4 kW specially designed to be able to tolerate a partially vitiated environment and, when not required to be firmly secured, to be self-extinguishing if knocked over.

2.19 hearth

A floor-level slab of fire-resisting material to prevent overheating of the floor beneath a heating appliance.

2.20 imitation fuel

A component designed to simulate solid fuel and be in contact with gas flames.

2.21 infill panel

A panel of fire-resisting material having an opening to accommodate a standard closure plate, used in a fireplace opening which is too large for the closure plate alone.

2.22 internal space

An interior space which is not a room, such as a hall, passageway, etc.

2.23 open flue system

A flue system that is open to a room or internal space at each appliance position.

NOTE. A flue system which does not incorporate a draught diverter or other flue break is sometimes referred to as a closed-flued system.

2.24 open-flued appliance

An appliance designed to be connected to an open flue system, its combustion air being drawn from the room or space in which it is installed.

2.25 radiant

A component forming part of a gas appliance and designed to become incandescent when heated by a gas flame.

2.26 radiant convector gas fire

A gas fire designed to emit heat by both radiation and convection.

2.27 radiant gas fire

A gas fire designed to emit heat mainly by radiation.

2.28 room-sealed appliance

An appliance which, when in operation, has the combustion system isolated from the room in which the appliance is installed.

2.29 ventilation

The process of supplying fresh air to, and removing vitiated air from, a room or internal space.

3 Exchange of information and planning

NOTE. Collaboration is essential between those concerned with the design and installation, both at the planning stage and during the execution of the work.

Particular matters that shall be considered are:

- (a) availability of gas supplies;
- (b) type of building, form of construction and level of thermal insulation;
- (c) location, orientation and exposure of building;
- (d) size, layout and purpose of rooms;
- (e) assessment of heat requirements (see clause 7 and appendix A);
- (f) size, height, type and route of flue together with materials of construction;
- (g) provision of adequate ventilation;
- (h) dimensions of fireplace openings and hearths together with materials of construction;
- (i) position of heating appliances in relation to probable position of fixtures, furniture and curtains;
- (j) electrical and water supplies (where applicable).

COMMENTARY AND RECOMMENDATIONS ON CLAUSE 3.

Some appliances require preliminary structural work to be completed at the building carcass stage. Suitable apertures or openings should be made for connection to a built-in flue or for terminating a balanced-flued heater. Hearths for appliances should be provided where necessary.

Section 2. Selection of appliances

4 Appliances

The appliance selected shall comply, where applicable, with the relevant Part of BS 5258, and shall be suitable for the gas with which it is to be supplied and the intended location (see clause 6).

Where no standard exists, the appliance shall be designed and constructed such that it can be used without constituting a danger to persons.

COMMENTARY AND RECOMMENDATIONS ON CLAUSE 4.
Consideration should be given to the following.

(a) Where no published British Standard exists (e.g. in the case of a novel appliance), the appliance should be selected only if it has been certified by a recognized testing authority. Such certification will be indicated in the manufacturer's literature and/or on the appliance data plate.

(b) The output of the appliance should be borne in mind during selection. In general, the appliances described in this standard heat the room in which they are installed. A fire/back boiler normally provides central heating to the rest of the dwelling and also domestic hot water. A fire/back circulator provides domestic hot water and may also heat a small number of radiators. However, a high-rated convector heater can be used in a hall, for example, to provide background central heating.

(c) Gas fires are available in two types, radiant fires and radiant/convector fires. They may be open-flued or room-sealed and may be available with either natural draught or fanned draught flueing. They are always fitted at low level, either floor-standing or wall-mounted.

(d) Convector heaters may be room-sealed, open-flued, or flueless. The flued types may be available with natural draught or fanned draught flueing. They are always fitted at low level, i.e. floor-standing or wall-mounted.

Whenever practicable a room-sealed appliance should be installed. It should be noted that flueless heaters may give rise to problems of condensation in the room.

Convector heaters in the form of greenhouse heaters are available in two forms, those which are freestanding, and those which are intended to be fixed to a wall or floor.

(e) Any appliance described in this standard can be used to heat a room or internal space, but the type chosen will depend on the user's personal preference; it should be based on a knowledge of the range of the appliances available, the use to which the room will be put and the period of usage.

(f) In some situations it may be desirable to provide two appliances in the same room or internal space rather than one, in order to obtain an even temperature distribution, e.g. in a long room. A fire/back boiler unit, together with a radiator supplied by the associated central heating circuit, provides an alternative arrangement for heating such a room or space. Some appliances incorporate fans to improve the circulation of convected air.

(g) Gas fires, convectors heaters, fire/back boilers and fire/back circulators are available with rated heat inputs in the following approximate ranges.

Gas fires:

Radiant 5 kW to 6 kW (see BS 5258 : Part 5)

Radiant/convector 4 kW to 8 kW (see BS 5258 : Part 5)

Convector heaters:

Flued 2 kW to 15 kW (see BS 5258 : Part 13)

Flueless (domestic) up to 4.75 kW (see BS 5258 : Parts 10 and 11)

Greenhouse heater up to 4 kW

Fire/back boilers:

Fire 4 kW to 8 kW (see BS 5258 : Part 8)

Boiler up to 22 kW (see BS 5258 : Part 8)

Fire/back circulators:

Fire 4 kW to 8 kW (see BS 5258 : Part 8)

Circulator up to 8 kW (see BS 5258 : Part 8)

(h) Gas fires of the fuel effect type covered by this Part of BS 5871 are available as follows:

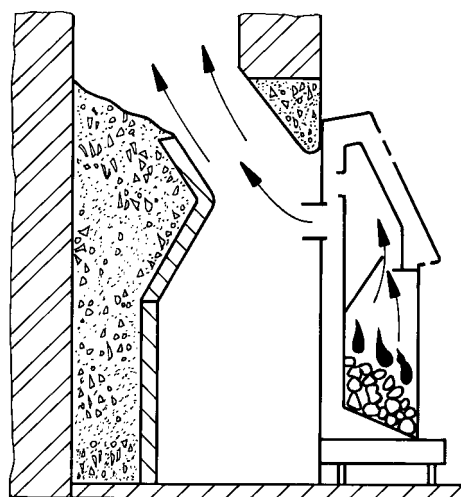
(1) for installation to a chimney or flue box using a closure plate (see figure 1(a) and 9.2, 9.3 and 9.4).

(2) for use with a proprietary fanned draught flue system (see 9.5).

(3) supplied with a flueing system, the fan for the evacuation of combustion products being integral with the appliance.

The appliances covered in (2) and (3) do not require a chimney or flue box for the evacuation of their combustion products. Appliances of the type detailed in (3) may be of the condensing type, see 9.6.

(i) For information purposes, figure 1 illustrates the types of fuel effect gas appliances covered by BS 5871 with respect to the flue size, location, ventilation and the passage of combustion products to the flue serving the appliance.



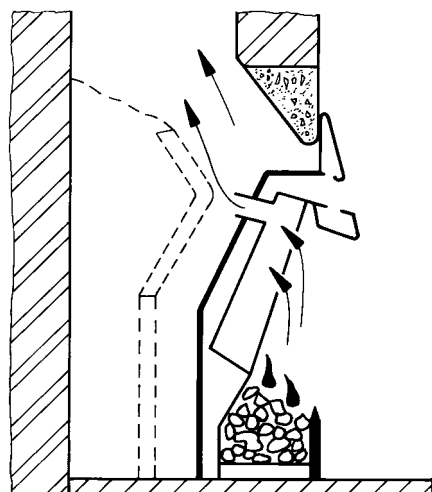
- (a) BS 5871 : Part 1
Gas fire (e.g. to BS 5258 : Part 5)

Flue size: Minimum of 125 mm across axis of flue normally required.

Location: Normally in front of closure plate which is fitted to fireplace opening.

Ventilation: Purpose provided ventilation not normally required up to 7 kW input.

NOTE. For this type of appliance the radiating surface can be in the form of either a radiant(s) or imitation fuel, the latter giving a live fuel effect.

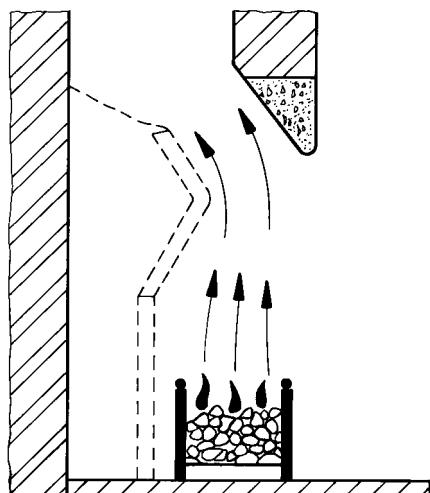


- (b) BS 5871 : Part 2
Inset live fuel effect gas fire (e.g. to BS 5258 : Part 16)

Flue size: Minimum of 175 mm across axis of flue normally required.

Location: Either fully or partially inset into builder's opening or fireplace recess. (For a recess, the chairbrick may have to be removed depending upon appliance design.)

Ventilation: Purpose provided ventilation not normally required up to 7 kW input.



- (c) BS 5871 : Part 3
Decorative fuel effect gas appliance
(e.g. to BS 5258 : Part 12)

Flue size: Minimum of 175 mm across axis of flue normally required.

Location: Within builder's opening or fireplace recess or flue box, or under an associated independent canopy. (For a recess, the chairbrick may have to be removed depending upon appliance design.)

Ventilation: Purpose provided ventilation of at least 100 cm² normally required up to 15 kW input.

Figure 1. Types of fuel effect appliances covered by BS 5871