

Flexible hoses, end fittings and sockets for gas burning appliances

Part 2. Specification for corrugated metallic flexible hoses, covers, end fittings and sockets for catering appliances burning 1st, 2nd and 3rd family gases

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Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee GSE/1, Gas fittings and connections, upon which the following bodies were represented:

- British Combustion Equipment Manufacturers' Association
- British Gas plc
- British Rubber Manufacturers' Association Ltd.
- British Turned-parts Manufacturers' Association
- Council for Registered Gas Installers
- Energy Industries Council
- Health and Safety Executive
- LP Gas Association
- Society of British Gas Industries
- The Association of Catering Equipment Manufacturers and Importers
- The Employers' Association of Catering Equipment Engineers Ltd.

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Foreword

This Part of BS 669 has been prepared by Technical Committee GSE/1. It supersedes BS 669 : Part 2 : 1995, which is withdrawn. The standard was first published in 1936 and revised in 1952 and 1960. Since then, three major changes have occurred, namely the introduction of 2nd and 3rd family gases and the adoption of the metric system. In addition the King report[1], published in 1977, preferred that connections to gas cooking appliances should be flexible and should incorporate a plug and socket that seals automatically when the plug is withdrawn.

The 1960 edition of BS 669 was reviewed under the direction of the Gas Standards Committee and the revised standard was published in two Parts:

Part 1 : *Specification for strip-wound metallic flexible hoses, covers, end fittings and sockets for domestic appliances burning 1st and 2nd family gases*

Part 2 : *Specification for corrugated metallic flexible hoses, covers, end fittings and sockets for catering appliances burning 1st and 2nd family gases*

This Part of BS 669 deals with corrugated metallic flexible connections for catering equipment.

The 1995 revision included requirements for 3rd family gases.

This revision is introduced to permit alternative types of construction.

Attention is drawn to the stated manufacturing tolerances and the need for careful quality control as outlined in BS EN ISO 9000.

Guidance on the use of flexible connections is given in BS 6173 for gas-fired catering appliances.

Pressure class 1, type B corrugated hoses specified in BS 6501 : Part 1 in general meet the requirements of this standard.

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

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 14, an inside back cover and a back cover.

Section 1. General

1.1 Scope

This Part of BS 669 specifies the minimum requirements for corrugated metallic flexible hoses, covers, end fittings and quick disconnect couplings or sockets for use with catering appliances burning 1st, 2nd and 3rd family gases at a nominal inlet pressure not exceeding 50 mbar¹⁾.

1.2 References

1.2.1 Normative references

This Part of BS 669 incorporates, by dated or undated reference, provisions from other publications. These normative references are made at the appropriate places in the text and the cited publications are listed on page 14. For dated references, only the edition cited applies; any subsequent amendments to or revisions of the cited publication apply to this British Standard only when incorporated in the reference by amendment or revision. For undated references, the latest edition of the cited publication applies, together with any amendments.

1.2.2 Informative references

This Part of BS 669 refers to other publications that provide information or guidance. Editions of these publications current at the time of issue of this standard are listed on the inside back cover, but reference should be made to the latest editions.

1.3 Definitions

For the purposes of this Part of BS 669 the definitions given in BS 1179 : 1967 and in BS 1179 : Part 6 apply together with the following.

1.3.1 braid

A layer (or layers) of cylindrically woven wires covering the hose.

1.3.2 corrugated metallic flexible hose

The flexible gas-tight metal element of an assembly without end fittings or covering.

1.3.3 cover

Any tubular outer cover used to improve the cleanliness of a flexible hose.

1.3.4 end fitting

A component permanently factory-fitted to a flexible hose that allows gas-tight connection to other pipework and can be a plug or a thread conforming to BS 21 : 1985, with a swivel, for fitting into the appropriate wall socket or appliance.

1.3.5 end fitting assembly

An assembled plug and socket or union complete with swivel.

1.3.6 flexible connection

The corrugated metallic flexible hose with braid, where fitted, cover and end fittings attached.

1.3.7 flexible connection assembly

The complete assembly comprising flexible connection and any matching socket.

1.3.8 flow rate

The rate of flow of gas through a flexible connection assembly under standard conditions.

1.3.9 inside diameter

The diameter of the largest sphere that can pass freely through the corrugated hose.

1.3.10 cover material

A synthetic material used to cover the flexible hose.

1.3.11 overall length

The length of a flexible connection assembly, measured while it is lying straight on a flat horizontal surface.

1.3.12 plug and socket or quick disconnect coupling

A two part fitting that provides quick connection and disconnection of an appliance at the gas supply, where the plug is an end fitting of the flexible connection and the socket is an installation fitting which is self-sealing as the plug is withdrawn.

NOTE. The phrase 'quick disconnect coupling' may be used interchangeably with 'plug and socket'. A quick disconnect coupling enables 360° axial rotation of the flexible hose with respect to the installation pipe fitting.

1.3.13 swivel (or rotary joint)

A permanently factory-fitted device other than fittings defined in 1.3.12 that enables a continuous axial rotation of the flexible hose with respect to the installation pipe fitting or to the appliance as appropriate without reducing the gas-tightness of the flexible connection assembly.

1.3.14 restraining device

A device that prohibits movement of the appliance away from the wall beyond the maximum extension of the device.

¹⁾ 1 mbar = 100 N/m² = 100 Pa.

Section 2. Flexible connection

2.1 General

2.1.1 Size

The nominal sizes of the flexible connection assembly shall be ¼, ⅜, ½, ¾, 1, 1¼, and 1½, in accordance with BS 21 : 1985.

2.1.2 Flow rate

The flow rate through the flexible connection assembly when passing air shall not be less than that given in table 1 at the appropriate pressure drop.

2.2 Design and dimensions

2.2.1 Corrugated metallic flexible hose

The hose shall be without circumferential joins and shall be manufactured from:

- a) seamless tube; or
- b) single longitudinally butt-welded tube.

The corrugations shall be annular and shall be of uniform height and pitch and continuous along the length of the hose, except for that section of the hose at the terminals required for transition. After forming the corrugated hose, the surface shall be free from any defects, e.g. scores or dents, which might cause premature failure.

Helical hoses shall only be used in designs which incorporate a transition section of plain tube. The transition section shall be supported by the fitting and used with both welded joints and mechanical fittings.

2.2.2 Braid

The flexible connection shall be either braided or unbraided. Where braid is used it shall conform to the requirements in 2.3.3 and 2.4.1.

2.2.3 Cover

For the purpose of cleanliness, a smooth outer cover of synthetic material shall be fitted to each flexible connection. This cover shall:

- a) extend over all parts of the flexible metallic hose that are capable of being bent or flexed and be a tight fit on the end connections;
- b) have no adverse effect on the performance of the metallic hose;
- c) have a minimum wall thickness of 0.5 mm after fitting;
- d) be coloured yellow ochre in accordance with BS 4800 : 1989, colour code 08C35 or 10E53.

Table 1. Flow rate through flexible connection assemblies					
Nominal size of flexible connection assembly (inlet connection)	Diameter (min.)	Overall length of flexible connection assembly	Tolerance on length	Air flow rate (min.)	Air pressure drop (max.)
	mm	mm	mm	m³/h	mbar
¼	6	1000	+ 55 - 15	0.3	0.58
⅜	8	1000	+ 55 - 15	0.6	0.58
½	10	1000	+ 55 - 15	1.3	0.58
¾	15	1000	+ 55 - 15	3.0	0.58
1	20	1000	+ 55 - 15	5.0	0.58
1 ¼	25	1000	+ 55 - 15	9.0	0.58
1 ½	32	1000	+ 55 - 15	12.0	0.58