

Anaesthetic and analgesic machines —

**Part 2: Specification for intermittent
(demand) flow analgesic machines for
use with 50/50 % (V/V) nitrous oxide and
oxygen**

UDC 615.471:616-089.5

Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee CH/121/1, Anaesthetic machines, breathing systems and anaesthetic gas scavenging systems, upon which the following bodies were represented:

- Association of Anaesthetists of Great Britain and Ireland
- Association of British Health-care Industries
- British Anaesthetic and Respiratory Equipment Manufacturers' Association
- Department of Health
- Medical Sterile Products Association

The following body was also, represented in the drafting of the standard, through subcommittees and panels:

- Guild of Hospital Pharmacists

This British Standard, having been prepared under the direction of the Health and Environment Sector Board, was published under the authority of the Standards Board and comes into effect on 15 February 1996

© BSI 14 January 2003

First published January 1968
Second edition January 1996

The following BSI references relate to the work on this standard:
Committee reference CH/121/1
Draft for comment 92/59246 DC

ISBN 0 580 24776 7

Amendments issued since publication

Amd. No.	Date	Comments
13963	14 January 2003	See national foreword

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Foreword

This Part of BS 4272 has been prepared by Technical Committee CH/121/1. It supersedes BS 4272-2:1968, which is withdrawn.

The start and finish of text introduced or altered by Amendment No. 1 is indicated in the text by tags **A1** **A1**.

Since BS 4272-2:1968 was published, the use of analgesic machines of this type has been extended to emergency situations and to medical fields other than the original application in midwifery.

The major differences between this standard and BS 4272-2:1968 are as follows.

- a) Requirements related to the safety of high-pressure components have been added.
- b) Requirements related to mechanical construction have been added, with particular relevance to the use of the equipment in emergency situations.
- c) The requirements for the gas supply connection, pertaining to compatibility with anaesthetic and respiratory equipment specified in other British Standards, have been clarified.
- d) The test methods have been modified so that they are consistent with those in other British Standards for anaesthetic and respiratory equipment.
- e) The requirements for marking and instructions have been aligned with the Essential Requirements of the EEC Directive for Medical Devices.
- f) The pressure/flow characteristics of the demand valve have been reconsidered. Whilst there have been no reports of hazards to the patient resulting from the previous peak flow of 300 l/min, evidence was presented to the committee responsible for this standard that rapid response to inspiratory effort may be as significant as the peak flow capability in satisfying the respiratory needs of the patient, and a lower peak flow may therefore be acceptable. Analgesic machines based on this premise have been in use without report of hazards.

The other Parts of BS 4272 are as follows:

BS 4272, *Anaesthetic and analgesic machines*

— Part 1:1968 *Anaesthetic machines of the on-demand type supplied with nitrous oxide and oxygen from separate containers*;

— Part 3:1989 *Specification for continuous flow anaesthetic machines*.

Part 1 and Part 3 of BS 4272 were declared obsolescent following review in 1991 and 2001 respectively.

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.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 11 and a back cover.

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1 Scope

This Part of BS 4272 specifies general design and performance requirements for analgesic machines of the intermittent flow (demand flow) type for use with 50/50 % (V/V) mixture of oxygen and nitrous oxide contained in one cylinder, (hereinafter referred to as “analgesic machines”).

This standard applies to analgesic machines intended for:

- a) connection directly to a high-pressure (approximately 17 MPa) cylinder; and
- b) connection to a low-pressure (280 kPa to 600 kPa) supply from a medical gas pipeline system, or a similar source, filled from cylinder(s).

Additional requirements for portable machines are included.

This standard applies to analgesic machines which are intended to be used under supervision for the self-administration of an analgesic mixture in response to the patient’s inspiratory effort, e.g. in obstetric practice or in emergency situations. It does not apply to analgesic machines with means to initiate gas flow other than by the patient’s inspiratory effort.

This standard does not give requirements for the composition of the gas mixture, or for the markings on the gas cylinder.

NOTE The gas is pre-mixed and specified in pharmacopoeia monographs. The markings on the gas cylinder are specified in  BS EN 850 .

2 Normative references

This Part of BS 4272 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 11. For dated references, only the edition cited applies; any subsequent amendments to or revisions of the cited publication apply to this Part of BS 4272 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.

3 Definitions

For the purposes of this Part of BS 4272, the definitions in  BS EN ISO 4135  apply, together with the following.

3.1

intermittent flow analgesic machine; demand flow analgesic machine

analgesic machine which, in response to the patient’s inspiratory effort, delivers a flow of gas which ceases at the start of the expiratory phase

3.2

direct probe

probe that has either the nut and nipple of a non-interchangeable screw-threaded (NIST) connector as integral parts, or is directly coupled to an item of medical equipment to form a single functional unit which is not intended to be dismantled, except for servicing

3.3

remote probe

probe connected to equipment by means of an intermediate hose, the hose insert being an integral part of the probe

3.4

demand valve

gas flow valve which opens only while a sub-atmospheric pressure exceeding a predetermined level is applied to its outlet