

Medical gas pipeline systems —

Part 1: Terminal units for compressed medical gases and vacuum

The European Standard EN 737-1:1998 has the status of a
British Standard

ICS 11.040.10; 23.040.60

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National foreword

This British Standard is the English language version of EN 737-1:1998 and covers terminal units for compressed medical gases and vacuum. Together with BS EN 739:1998, which covers hose assemblies and non-interchangeable screw-threaded (NIST) connectors, it partially supersedes BS 5682:1984 (as amended by AMD 5419:1987) which covered hose assemblies, terminal units and their connectors. The remainder of the content of BS 5682:1984, i.e. “quick connect” probes, is the subject of EN 737-6, currently in preparation.

When published, EN 737-6 is expected to have a lengthy transitional period, the date of withdrawal of conflicting national standards (DOW) being set several years in the future. BS 5682:1984 will be withdrawn on 13 June 1998 and replaced by a new edition (BS 5682:1998) which will retain only the requirements for quick connect probes given in the amended 1984 edition. This new edition is expected to co-exist with the forthcoming BS EN 737-6 until the expiry of the DOW of EN 737-6, at which time BS 5682:1998 will be withdrawn.

The UK participation in its preparation was entrusted to Technical Committee CH/44, Anaesthetic machines, breathing attachments, medical gas pipeline systems and hose assemblies, to Subcommittee CH/44/2, Medical gas supply systems, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this committee can be obtained on request to its secretary.

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI Standards Electronic Catalogue.

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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, the EN title page, pages 2 to 15 and a back cover.

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English version

Medical gas pipeline systems — Part 1: Terminal units for compressed medical gases and vacuum

Systèmes de distribution de gaz médicaux —
Partie 1: Prises murales pour gaz médicaux
comprimés et pour le vide (aspiration)

Rohrleitungssysteme für medizinische Gase —
Teil 1: Entnahmestellen für medizinische Druckgase
und Vakuum

This European Standard was approved by CEN on 5 July 1997.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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CEN

European Committee for Standardization
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Europäisches Komitee für Normung

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 215, Respiratory and anaesthetic equipment, the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by July 1998, and conflicting national standards shall be withdrawn at the latest by July 1998.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For special national conditions and transition periods for clause 7.2.1, see annex C.

EN 737 consists of the following parts under the general title *Medical gas pipeline systems*:

Part 1: Terminal units for compressed medical gases and vacuum;

Part 2: Anaesthetic gas scavenging disposal systems;

Part 3: Pipelines for compressed medical gases and vacuum;

Part 4: Terminal units for anaesthetic gas scavenging systems;

Part 5: Oxygen concentrators;

Part 6: Dimensions of probes for terminal units for compressed medical gases and vacuum.

Dimensions of probes are specified in prEN 737-6, which has a Date of Withdrawal (DoW) of (DOP + 15 years).

Until this time, products complying with national standards may continue to be used for the maintenance and repair of probes.

Annex C forms a normative part of this part of this European Standard. Annexes A and B are informative.

For relationship with EU Directive(s), see informative annex ZA, which is an integral part of this standard.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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Introduction

Terminal units are the points on a medical gas pipeline system where the operator makes connections and disconnections for the supply of specified medical gases to anaesthetic machines, lung ventilators or other items of medical equipment, and where a wrong connection may create a hazard to the life of a patient.

It is important that terminal units and their components are designed, manufactured, installed and maintained in such a way as to meet the basic requirements specified in this part of this European Standard. This part of this European Standard pays particular attention to:

- suitability of materials;
- gas-specificity;
- cleanliness;
- testing;
- identification;
- information supplied.

In any health care facility, it is strongly recommended that terminal units of only one type (i.e. with the same set of dimensions for probe and socket) are used for any particular gas. During hospital renovation it may be desirable to upgrade existing medical gas installations rather than renew them completely.

It is recognized that with modified terminal units it may not be possible to achieve the flow and pressure drop requirements of this part of this European Standard, due to limitations imposed by the pipeline system itself or by those components of the original terminal units that remain in the pipeline system.

This part of this European Standard specifies the provision of information for the installation and testing of terminal units. Testing after installation is critical to patient safety and it is essential that terminal units are not used until full testing in accordance with prEN 737-3 has been completed.

Rationales for some of the requirements of this part of this European Standard are given in annex B. These requirements are indicated by the letter “R” after the clause number.

1 Scope

1.1 This part of this European Standard specifies requirements for terminal units intended for use in medical gas pipeline systems specified in prEN 737-3 for use with the following medical gases:

- oxygen;
- nitrous oxide;
- air for breathing;
- carbon dioxide;
- oxygen/nitrous oxide mixture [50 %/50 % (V/V)];
- air for driving surgical tools;
- nitrogen for driving surgical tools;
- vacuum.

It is intended especially to ensure the gas-specific assembly of terminal units and to prevent their interchange between different gases.

1.2 This part of this European Standard also specifies requirements for:

- terminal units for the supply and disposal of air for driving surgical tools;
- probes intended to be connected to the gas-specific connection point which is part of a terminal unit;

1.3 This part of this European Standard does not specify:

- the dimensions of probes and of the gas-specific connection points of the terminal unit (see prEN 737-6);
- the dimensions of NIST connectors (see EN 739);
- requirements for terminal units for anaesthetic gas scavenging systems (see EN 737-4).

2 Normative references

This part of this European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

prEN 737-3, *Medical gas pipeline systems — Part 3: Pipelines for compressed medical gases and vacuum — Basic requirements.*

EN 739, *Low-pressure hose assemblies for use with medical gases.*

prEN 1441, *Medical devices — Risk analysis.*

ISO 32, *Gas cylinders for medical use — Marking for identification of content.*

ISO 554, *Standard atmospheres for conditioning and/or testing — Specifications.*

3 Definitions

For the purposes of this part of this European Standard, the following definitions apply.

3.1

gas-specific

having characteristics which prevent interchangeability and thereby allow assignment to one gas or vacuum service only

3.2

gas-specific connection point

that part of the socket which is the receptor for a gas-specific probe



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3.3

gas-specific connector

NIST (non-interchangeable screw-threaded) connector (see EN 739) or a probe (see prEN 737-6)

3.4

low-pressure hose assembly

assembly which consists of a flexible hose with permanently-attached gas-specific inlet and outlet connectors which is designed to conduct a medical gas at pressures between 300 kPa and 1 400 kPa and for use with a vacuum service at pressures above 10 kPa absolute (see EN 739)

3.5

medical gas

any gas or mixture of gases intended to be administered to patients for therapeutic, diagnostic or prophylactic purposes or for surgical tool application

3.6

medical gas pipeline system

central supply system with control equipment, a pipeline distribution system and terminal units at the points where medical gases or vacuum are required

3.7

medical gas supply system

either:

- a) a medical gas pipeline system; or
- b) any other installation having no permanent pipeline system but employing a medical gas supply source complete with pressure regulators

3.8

NIST connectors; non-interchangeable screw-threaded connectors

range of male and female components intended to maintain gas-specificity by the allocation of a set of different diameters and a left or right hand screw thread to the mating components for each particular gas

3.9

nominal distribution pressure

pressure which the pipeline distribution system is intended to deliver at the terminal units

3.10

probe

non-interchangeable male component designed for acceptance by and retention in the socket

3.11

quick connector

pair of non-threaded gas-specific components which can be easily and rapidly joined together by a single action of one or both hands without the use of tools

3.12

single fault condition

condition in which a single means for protection against a safety hazard in equipment is defective or a single external abnormal condition is present

3.13

socket

that part of a terminal unit which is either integral or attached to the base block by a gas-specific interface and which contains the gas-specific connection point

3.14

terminal unit

outlet assembly (inlet for vacuum) in a medical gas supply system at which the operator makes connections and disconnections

3.15

terminal unit base block

that part of a terminal unit which is attached to the pipeline distribution system

3.16

terminal unit check valve

valve which remains closed until opened by insertion of an appropriate probe and which then permits flow in either direction

3.17

terminal unit for supply and disposal of air for driving tools

combination of an outlet assembly (for the supply) and an inlet assembly (for disposal) which are connected to a supply system and to a disposal system respectively and at which the operator makes connections and disconnections by means of a combined probe

3.18

terminal unit maintenance valve

valve which permits maintenance of the terminal unit without shutting down the pipeline system to other terminal units

4 Terminology

A diagram of a typical terminal unit with examples of terminology is given in Figure 1.