

SVENSK STANDARD

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Anestesi- och ventilationsutrustning – Koniska kopplingar – Del 1: Han- och honkopplingar (ISO 5356-1:2015)

Anaesthetic and respiratory equipment – Conical connectors – Part 1: Cones and sockets (ISO 5356-1:2015)

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Denna standard ersätter SS-EN ISO 5356-1:2004, utgåva 1.

The European Standard EN ISO 5356-1:2015 has the status of a Swedish Standard. This document contains the official English version of EN ISO 5356-1:2015.

This standard supersedes the Swedish Standard SS-EN ISO 5356-1:2004, edition 1.

**Förhållandet till övriga delar under samma huvudtitel - Utdrag ur Förord i ISO 5356-1:2015/
Relations to other parts under the same general title - Extract from the Foreword of ISO 5356-1:2015**

ISO 5356 consists of the following parts, under the general title *Anaesthetic and respiratory equipment — Conical connectors*:

- Part 1: *Cones and sockets*
- Part 2: *Screw-threaded weight-bearing connectors*

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Denna standard är framtagen av kommittén för Anestesi- och respiratorutrustning, SIS/TK 329.

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EUROPEAN STANDARD

EN ISO 5356-1

NORME EUROPÉENNE

EUROPÄISCHE NORM

March 2015

ICS 11.040.10

Supersedes EN ISO 5356-1:2004

English Version

Anaesthetic and respiratory equipment - Conical connectors - Part 1: Cones and sockets (ISO 5356-1:2015)

Matériel d'anesthésie et de réanimation respiratoire -
Raccords coniques - Partie 1: Raccords mâles et femelles
(ISO 5356-1:2015)

Anästhesie- und Beatmungsgeräte - Konische Konnektoren
- Teil 1: Männliche und weibliche Konen (ISO 5356-1:2015)

This European Standard was approved by CEN on 10 January 2015.

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Foreword

This document (EN ISO 5356-1:2015) has been prepared by Technical Committee ISO/TC 121 "Anaesthetic and respiratory equipment" in collaboration with 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of an identical text or by endorsement, at the latest by September 2015, and conflicting national standards shall be withdrawn at the latest by September 2015.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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Endorsement notice

The text of ISO 5356-1:2015 has been approved by CEN as EN ISO 5356-1:2015 without any modification.

Introduction

In clinical practice, several breathing attachments used in anaesthetic and respiratory equipment may have to be joined together to provide a suitable breathing system. Items of medical equipment, such as a humidifier or a spirometer, are often incorporated into the breathing system which might also be connected to an anaesthetic gas scavenging system. Connections for these purposes are usually cone and socket joints, and a lack of standardization of these connections has given rise to problems of interchangeability when connecting equipment made by different manufacturers. This part of ISO 5356 specifies the requirements and dimensions for cones and sockets used in anaesthetic and respiratory equipment.

An important consideration is that conical connections need to be secure but nevertheless disconnectable by the operator. The use of cones and sockets meeting the requirements of this part of ISO 5356 will not necessarily prevent them being disconnected accidentally. To minimize the risk of 22 mm connectors being accidentally disconnected, latching sockets can be used.

[Annex A](#) includes a figure and a table detailing plug and ring test gauges that are used to check cones and sockets made of materials other than metal. [Annex B](#), [Annex C](#), and [Annex D](#) provide test methods for latching sockets, [Annex E](#) includes a figure and table detailing plug and ring test gauges that can be used to check metal cones and sockets, and [Annex F](#) contains recommendations for testing the security of latching sockets.

[Figure 1](#), detailing the dimensions and tolerances of cones and sockets, has been prepared in accordance with ISO 3040.

In this document, the following print types are used:

- requirements, compliance with which can be verified, and definitions: roman type;
- notes and examples: smaller roman type;
- test methods: *italic type*.

Anaesthetic and respiratory equipment — Conical connectors —

Part 1: Cones and sockets

1 Scope

This part of ISO 5356 specifies dimensional and gauging requirements for cones and sockets intended for connecting anaesthetic and respiratory equipment, e.g. in breathing systems, anaesthetic gas scavenging systems, and vaporizers. The cones and sockets are therefore not regarded as devices in their own right.

This part of ISO 5356 gives requirements for the following cones and sockets:

- 8,5 mm and 11,5 mm sizes intended for use in neonatal and paediatric breathing systems;
- 15 mm and 22 mm sizes intended for general use in breathing systems;
- 22 mm latching sockets (including performance requirements);
- 23 mm size intended for use with vaporizers, but not for use in breathing systems;
- 30 mm size intended for the connection of a breathing system to an anaesthetic gas scavenging system.

This part of ISO 5356 does not specify the medical devices and accessories on which these cones and sockets are to be provided.

Requirements for the application of cones and sockets are not included in this part of ISO 5356, but are or will be given in the relevant International Standards for specific medical devices and accessories.

NOTE Requirements for screw-threaded weight-bearing connectors are specified in ISO 5356-2.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 5367:2014, *Anaesthetic and respiratory equipment — Breathing sets and connectors*

3 Dimensional requirements

3.1 General requirements

3.1.1 Cones and sockets made of metal shall comply with [Figure 1](#) and the dimensions given in [Table 1](#) as appropriate.

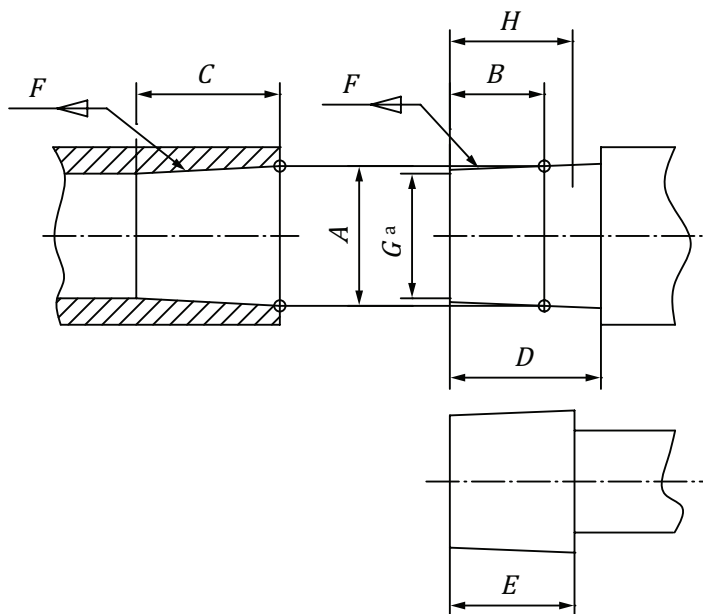
Check compliance by functional testing.

NOTE [Annex E](#) includes a figure and table detailing plug and ring test gauges that can be used to check metal cones and sockets.

3.1.2 Cones and sockets made of non-metallic materials shall comply with [Figure 1](#) and the dimensions given in [Table 1](#) except that the dimensions A and B and ratio F may vary from those given in [Table 1](#).

Check compliance by engaging the cone or socket in the appropriate plug or ring test gauge according to [Figure A.1](#) and [Table A.1](#), by applying an axial force of $(35 \pm 3,5)$ N for 8,5 mm, 11,5 mm, and 15 mm cones or sockets and (50 ± 5) N for 22 mm and 30 mm cones or sockets while simultaneously rotating the cone or socket $(20 \pm 5)^\circ$. Its leading edge shall lie between the minimum and maximum diameter steps of the gauge. The cones or sockets and gauges shall be maintained at a temperature of (20 ± 3) °C during the test.

NOTE Because cones or sockets made from plastics materials (for example polyamide, polyacetal, polycarbonate, polysulfone) can vary greatly in their physical characteristics, it is not considered practicable to specify dimensions A , B , and ratio F ; for this reason, gauging requirements have been included. It is also considered impracticable to generalize on matters such as cold flow and thermal instability, as well as possible changes in physical characteristics, contact with solvents, etc.



^a For the 8,5 mm cone and the 30 mm cone, dimension G over the minimum length, H , as specified in [Table 1](#).

NOTE The radius on the entrance to the socket and on the leading edge of the cone is not intended to be less than 0,5 mm and not more than 0,8 mm.

Figure 1 — Interconnecting details of cones and sockets

Table 1 — Dimensions of cones and sockets (see Figure 1)

Dimensions in millimetres

Connector size	A	B	Taper length C	Clearance to shoulder (if present) D	Length to taper E	Taper ratio F	Minimum internal diameter of cone G	Minimum length of internal diameter of the cone (G) H
8,5	$8,45 \pm 0,04$	6	$\geq 6,4$	$\geq 8,9$	≥ 8	1:19	6,25	6,0
11,5	$11,50 \pm 0,04$	10	$\geq 13,5$	≥ 16	≥ 15	1:40	a	a
15	$15,47 \pm 0,04$	10	≥ 16	≥ 16	$\geq 14,5$	1:40	a	a
22	$22,37 \pm 0,04$	15	≥ 21	See Figure 3	See Figure 3	1:40	a	a
23	$23,175 \pm 0,02$	13	≥ 18	≥ 18	≥ 15	1:36	a	a
30	$30,9 \pm 0,05$	14	≥ 18	≥ 18	≥ 14	1:20	27,0	12,0

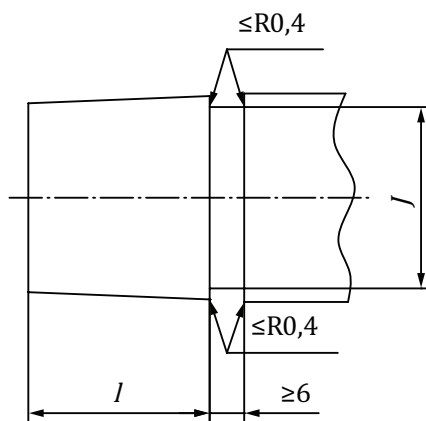
a Not specified.

3.2 Additional requirements

3.2.1 22 mm cones designed to connect to a breathing tube complying with ISO 5367:2014, 5.3.2.2, or a latching socket (see Clause 4) shall incorporate a recess, the dimensions of which are given in Figure 2.

Check compliance by functional testing.

Dimensions in millimetres



Key

l taper length: $19,5^{+0,5}_0$

J diameter of recess: $20^{+0,5}_0$

Figure 2 — Details of recess for 22 mm cones

3.2.2 22 mm cones, designed to connect to a face mask shall incorporate a means to prevent over insertion (e.g. shoulder) and comply with the dimensions given in Figure 3.

Check compliance by functional testing.