
**Transfusion equipment for medical
use —**

**Part 5:
Transfusion sets for single use with
pressure infusion apparatus**

Matériel de transfusion à usage médical —

*Partie 5: Appareils de transfusion non réutilisables avec les appareils
de perfusion sous pression*

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 76, *Transfusion, infusion and injection, and blood processing equipment for medical and pharmaceutical use*.

This first edition of ISO 1135-5, together with ISO 1135-4, cancels and replaces ISO 1135-4:2012, which has been technically revised with the following changes:

- the scope of ISO 1135-4 has been restricted to gravity feed applications, whereby, ISO 1135-5 is focused on pressure infusion applications;
- a new Annex D on 'Storage volume' has been added.

ISO 1135 consists of the following parts, under the general title *Transfusion equipment for medical use*:

- *Part 3: Blood-taking sets for single use*
- *Part 4: Transfusion sets for single use, gravity feed*
- *Part 5: Transfusion sets for single use with pressure infusion apparatus*

Transfusion equipment for medical use —

Part 5:

Transfusion sets for single use with pressure infusion apparatus

1 Scope

This part of ISO 1135 specifies requirements for single use transfusion sets for use with pressure infusion equipment capable of generating pressures up to 200 kPa (2 bar). This International Standard ensures compatibility with containers for blood and blood components as well as intravenous equipment.

Secondary aims of this part of ISO 1135 are to provide guidance on specifications relating to the quality and performance of materials used in transfusion sets, to present designations for transfusion set components, and to ensure the compatibility of sets with red cell and plasma blood components.

Platelet components should not be transfused under pressure using these sets.

In some countries, the national pharmacopoeia or other national regulations are legally binding and take precedence over this part of ISO 1135.

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 594-1¹⁾, *Conical fittings with a 6 % (Luer) taper for syringes, needles and certain other medical equipment — Part 1: General requirements*

ISO 594-2¹⁾, *Conical fittings with 6 % (Luer) taper for syringes, needles and certain other medical equipment — Part 2: Lock fittings*

ISO 3696, *Water for analytical laboratory use — Specification and test methods*

ISO 3826-1:2013, *Plastics collapsible containers for human blood and blood components — Part 1: Conventional containers*

ISO 3826-2, *Plastics collapsible containers for human blood and blood components — Part 2: Graphical symbols for use on labels and instruction leaflets*

ISO 10993-1, *Biological evaluation of medical devices — Part 1: Evaluation and testing within a risk management process*

ISO 10993-4, *Biological evaluation of medical devices — Part 4: Selection of tests for interactions with blood*

ISO 14644-1, *Cleanrooms and associated controlled environments — Part 1: Classification of air cleanliness*

ISO 15223-1, *Medical devices — Symbols to be used with medical device labels, labelling and information to be supplied — Part 1: General requirements*

1) To be replaced by ISO 80369-7.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

NOTE These terms and definitions are specifically applicable to Annex D.

3.1 filling volume

V_F
volume of tube during “pressure less” filling, respectively filling by gravity

Note 1 to entry: The tube remains unstressed.

Note 2 to entry: The filling volume is to be equated with the calculated volume of the tube.

3.2 storage volume

V_S
tube volume during pressurization equal to filling volume, V_F , plus bolus volume, V_S : $V_S = V_F + V_B$

3.3 bolus volume

V_B
increased tube volume during pressurization (storage volume, V_S) in comparison with the unstressed tube (filling volume, V_F)

Note 1 to entry: For illustration of the bolus volume, see [Figure 1](#).

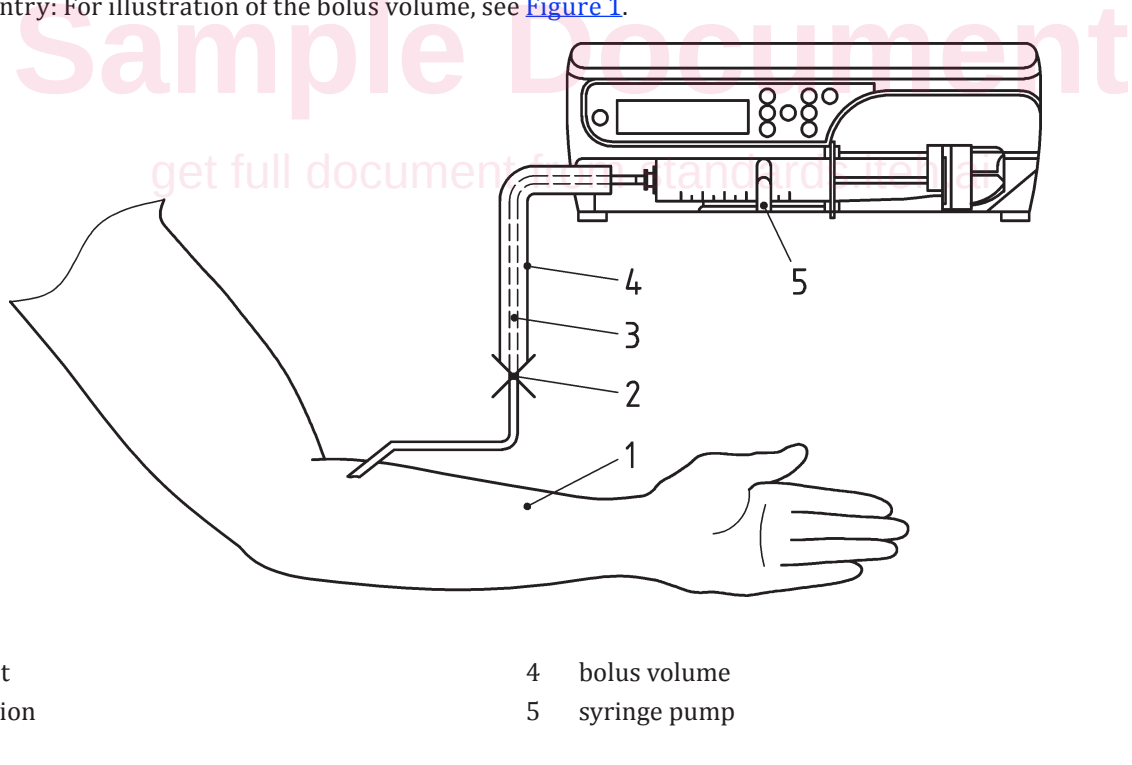
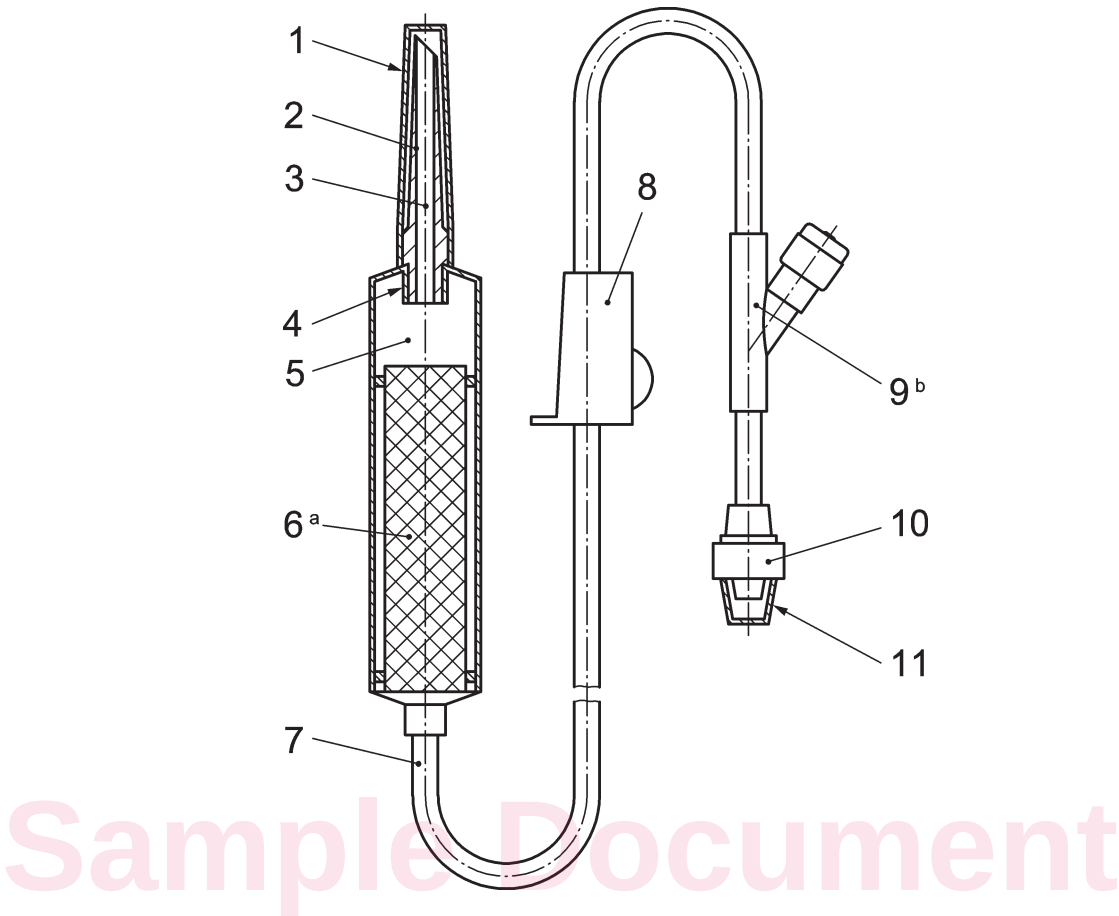


Figure 1 — Bolus volume

4 General requirements

4.1 Nomenclature for components of the transfusion set

The nomenclature for components of transfusion sets is given in [Figure 2](#).



Key

- | | |
|---|---|
| 1 protective cap of the closure-piercing device | 8 flow regulator |
| 2 closure-piercing device | 9 injection site |
| 3 fluid channel | 10 male conical fitting |
| 4 drip tube | 11 protective cap of the male conical fitting |
| 5 drip chamber | a Indicates alternative locations of the filter for blood and blood components. Other designs are acceptable, if the same safety aspects are ensured. |
| 6 filter for blood and blood components | b Injection site is optional. |
| 7 tubing | |

Figure 2 — Example of a transfusion set

4.2 Maintenance of sterility

The transfusion set shall be provided with protective caps to maintain sterility of the internal parts of the set until the set is used.

5 Materials

The materials from which the transfusion sets given in [Clause 4](#) are manufactured shall comply with the requirements specified in [Clause 6](#). If components of the transfusion set come into contact with blood and blood components, they shall additionally comply with the requirements specified in [Clauses 7](#) and [8](#).