INTERNATIONAL STANDARD

ISO 10333-6

First edition
2004-01-15

Personal fall-arrest systems —

Part 6: System performance tests

Systèmes individuels d'arrêt de chute —

Partie 6: Essais de performance

iTeh STANDARD PREVIEW
(standards.iteh.ai)
ISO 10333-6:2004
https://standards.iteh.ai/catalog/standards/sist/e9e9bfc2-9ea8-481f-ab7d-5650742650bb/iso-10333-6-2004

Reference number
ISO 10333-6:2004(E)

© ISO 2004

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO 10333-6:2004
https://standards.iteh.ai/catalog/standards/sist/e9e9bfc2-9ea8-481f-ab7d-5650742650bb/iso-10333-6-2004

© ISO 2004

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

 © ISO 2004 – All rights reserved

Contents

Page

iTeh STANDARD PREVIEW
(standards.iteh.ai)
ISO 10333-6:2004
https://standards.iteh.ai/catalog/standards/sist/e9e9bfe2-9ea8-481f-ab7d-5650742650bb/iso-10333-6-2004

© ISO 2004 – All rights reserved

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 10333-6 was prepared by Technical Committee ISO/TC 94, *Personal safety — Protective clothing and equipment*, Subcommittee SC 4, *Personal equipment for protection against falls*.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO 10333 consists of the following parts, under the general title *Personal fall-arrest systems*:

ISO 10333-6:2004
https://standards.iteh.ai/catalog/standards/sist/e9e9bfc2-9ea8-481f-ab7d-5650742650bb/iso-10333-6-2004

— *Part 1: Full-body harnesses*

— *Part 2: Lanyards and energy absorbers*

— *Part 3: Self-retracting lifelines*

— *Part 4: Vertical rails and vertical lifelines incorporating a sliding-type fall arrester*

— *Part 5: Connectors with self-closing and self-locking gates*

— *Part 6: System performance tests*

© ISO 2004 – All rights reserved

Introduction

Fall arrest equipment has been traditionally manufactured and tested as discrete components, which are then linked together in series to form a personal fall arrest system (PFAS) by the user, before commencing work.

This requires personnel in the supply and use chain who are capable of deciding which combinations of components can be linked together and which of those cannot.

Over the years, a continuous process of fall simulation and strength testing has revealed the dangers of linking incompatible components together, as a result of test failures, near misses and accidents. Examples have included: inadvertent release of connections, localized overloading or overstressing of components, and unexpected decrease in performance levels. These incidents occurred because insufficient analysis and attention had been paid to the particular combination of components in question, and because the interaction between the components in a fall was unknown.

Further investigation showed that the behaviour of a complete system under test could reveal shortcomings which could not be detected when the individual components of the same system were tested separately.

Consequently, in 1979 and 1985, other fall arrest standards with a lineage back to 1947 were revised to ensure that performance tests were conducted on complete systems. This allowed the complete PFAS to be tested in the actual mode of use, and an arrested fall to be simulated as closely as possible under test conditions.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

This part of ISO 10333 fully supports the essential requirements of the range of current International Standards written to specify the components that are used to form personal fall arrest systems, i.e. the other parts of ISO 10333, and ISO 14567.

ISO 10333-6:2004
https://standards.iteh.ai/catalog/standards/sist/e9e9bfc2-9ea8-481f-ab7d-56507d2650bb/iso-10333-6-2004

However, in recognizing the importance of complete personal fall arrest system performance tests, this part of ISO 10333 provides test methods for situations where it is both important and desirable to ascertain satisfactory system performance and interactive component compatibility. It goes beyond that required in the above component standards by specifying system performance testing applicable to complete personal fall arrest systems, as opposed to component testing, which only requires tests on individual components.

In cases where the hazard of falling from a height exists and where, for technical reasons or for work of very short duration, safe access cannot be otherwise provided, it is necessary to consider the use of PFAS. Such use should never be improvised and its adoption should be specifically provided for in the appropriate formal provisions for safety in the work place.

PFAS complying with this part of ISO 10333 ought also to satisfy ergonomic requirements and only be used if the work allows means of connection to a suitable anchor device of demonstrated strength and if it can be implemented without compromising the safety of the user. Personnel need to be trained and instructed in the safe use of the equipment and be observant of such training and instruction.

This part of ISO 10333 is based on current knowledge and practice concerning the use of PFAS that incorporate a full-body harness as specified in ISO 10333-1.

This part of ISO 10333 presumes that the manufacturer of the PFAS, subsystems or components will, for the sake of consistency and traceability, operate a quality management system which will comply with national and regional regulations in force at the time. Guidance on the form this quality management system may take can be found in ISO 9000.

© ISO 2004 – All rights reserved

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO 10333-6:2004
https://standards.iteh.ai/catalog/standards/sist/e9e9bfc2-9ea8-481f-ab7d-5650742650bb/iso-10333-6-2004

Personal fall-arrest systems —

Part 6:
System performance tests

1 Scope

This part of ISO 10333 specifies tests and requirements for complete personal fall arrest systems (PFAS) made up from specific combinations of components and subsystems selected from those conforming to the other parts of ISO 10333 and to ISO 14567, where it is both important and desirable to ascertain satisfactory system performance and interactive component compatibility. It includes PFAS performance tests using a rigid torso test mass as a surrogate for the faller. Examples of personal fall arrest systems, as well as descriptions of how components or subsystems may be connected together to constitute a system, are also given.

This part of ISO 10333 is applicable to PFAS limited to single-person use of a total mass not exceeding 100 kg and, when activated, will arrest the person and limit the arresting force to a maximum of 6 kN.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

It is not applicable to

a) PFAS which use waist belts or chest harnesses as the sole body holding component,

ISO 10333-6:2004
https://standards.iteh.ai/catalog/standards/sist/c9c0bfc2-9ea8-481f-ab7d-5650742650bb/iso-10333-6-2004

b) PFAS incorporating lanyards without energy absorbers or without a means of energy dissipation,

c) subsystems and components outside the PFAS scopes of the other parts of ISO 10333 and ISO 14567, or

d) equipment used for material lifting purposes.

Where other features are integral with components and subsystems which allow them to be assembled into other types of safety system associated with personal fall arrest systems — for example, work positioning systems (WPS), fall restraint systems (FRS), controlled descent systems (CDS), confined space access systems (CSAS) or rescue systems (RS) — this part of ISO 10333 relates only to the fall arrest function of such components and subsystems.

This part of ISO 10333 does not specify those additional requirements that would apply when personal fall arrest systems are subjected to special conditions of use (where, for example, there exist unusual limitations concerning access to the place of work and/or particular environmental factors).

NOTE Personal fall arrest systems outside the scope of this part of ISO 10333 need to be performance tested in the manner in which they are intended to be used, taking into account the workplace geometry. Advice will need to be sought from the equipment manufacturer accordingly.

2 Normative references

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

ISO 10333-1:2000, *Personal fall-arrest systems — Part 1: Full-body harnesses*

© ISO 2004 – All rights reserved

ISO 10333-2: 2000, *Personal fall arrest systems — Part 2: Lanyards and energy absorbers*

ISO 10333-3: 2000, *Personal fall arrest systems — Part 3: Self-retracting lifelines*

ISO 10333-4: 2002, *Personal fall arrest systems — Part 4: Vertical rails and vertical lifelines incorporating a sliding-type fall arrester*

ISO 10333-5:2001, *Personal fall-arrest systems — Part 5: Connectors with self-closing and self-locking gates*

ISO 14567:1999, *Personal protective equipment for protection against falls from a height — Single-point anchor devices*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 10333-1 to ISO 10333-5, ISO 14567 and the following apply.

3.1
personal fall arrest system
PFAS
assembly of interconnected components and subsystems, including a full-body harness worn by the user, that when connected to a suitable anchor device will arrest a fall from a height

NOTE A personal fall arrest system minimizes the fall arrest forces, controls the total fall distance to prevent collision with the ground or other relevant obstruction, and maintains the user in a suitable post-fall arrest attitude for rescue purposes. For examples, see Figure 1.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

3.2
subsystem
constituent part of a personal fall arrest system which may consist of one or more components and which is used to connect the user from the fall arrest attachment element of the full-body harness to the anchor device

ISO 10333-6:2004
https://standards.iteh.ai/catalog/standards/sist/e9e9bfc2-9ea8-4811-a67d-3630742630bb/iso-10333-6-2004

NOTE A subsystem performs the two essential functions of (a) connecting, and (b) arresting and energy-absorbing.

3.3
component
constituent part of a personal fall arrest system or subsystem that has completed the manufacturer’s production cycle and is available for purchase

3.4
manufacturer
business concern that manufactures components or subsystems or both for use in personal fall arrest systems

3.5
assembler
business concern or person who assembles components or subsystems into systems ready for use

NOTE An assembler could be the manufacturer, a manufacturer’s agent or distributor, supplier, the purchasing company intending to use the components or subsystems, a purchaser, safety officer, supervisor, or the user.

3.6
total mass
sum of the user’s mass and all attached clothing and equipment

3.7
required free space
space required beneath a user to avoid collision with the ground or a structure

 © ISO 2004 – All rights reserved

4 Designation

Designation shall be by means of a code that uses abbreviations and symbols to represent the assembled order of components and subsystems in the configuration of a personal fall arrest system, in accordance with Tables 1 and 2.

Table 1 — Abbreviations and symbols

Abbreviation/symbol	Component/subsystem	Applicable International Standard
FBH	Full-body harness	ISO 10333-1
EAL	Energy-absorbing lanyard	ISO 10333-2
SRL	Self-retracting lifeline	ISO 10333-3
TVLL	Temporary vertical lifeline	ISO 10333-4
PVLL	Permanent vertical lifeline	ISO 10333-4
VR	Vertical rail	ISO 10333-4
+	Connector	ISO 10333-5
A	Anchor device	ISO 14567

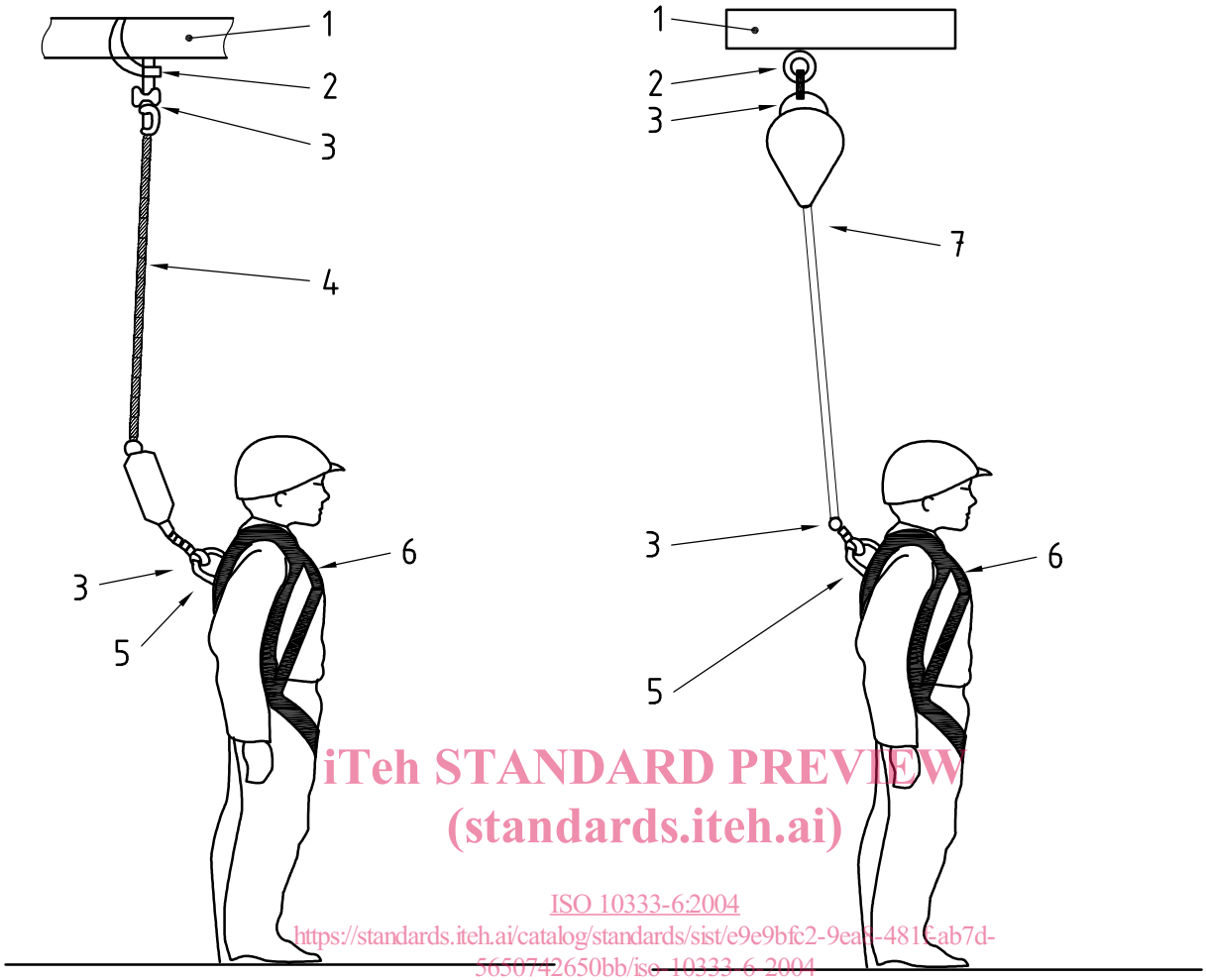
Table 2 — Codes

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Code	PFAS type	Figure
A + EAL + FBH	PFAS based on an energy-absorbing lanyard.	1 a)
A + SRL + FBH	PFAS based on a self-retracting lifeline.	1 b)
A + TVLL + FBH	PFAS based on a temporary vertical lifeline.	1 c)
A + PVLL + FBH	PFAS based on a permanent vertical lifeline.	1 d)
A + VR + FBH	PFAS based on a vertical rail.	1 e)

ISO 10333-6:2004
https://standards.iteh.ai/catalog/standards/sist/e9e9bf62-9ee8-4816-ab7d-56507426650bb/iso-10333-6-2004

© ISO 2004 – All rights reserved



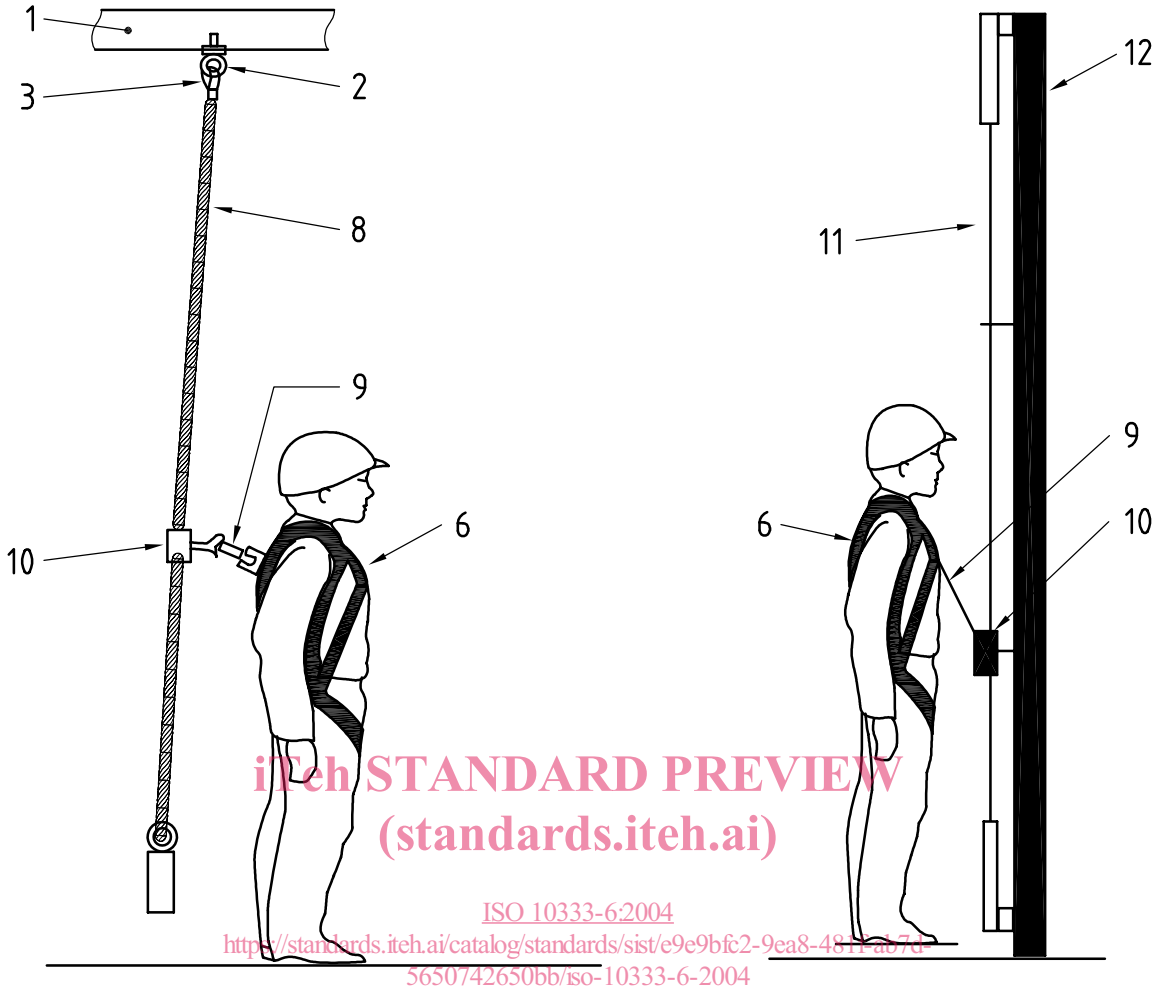
iTeh STANDARD PREVIEW
(standards.iteh.ai)
ISO 10333-6:2004
https://standards.iteh.ai/catalog/standards/sist/e9e9bfc2-9ea8-481e-ab7d-5650742650bb/iso-10333-6-2004

a) PFAS based on energy-absorbing lanyard

b) PFAS based on self-retracting lifeline

Figure 1 — Examples of fall arrest systems (PFAS) *(continued)*

© ISO 2004 – All rights reserved



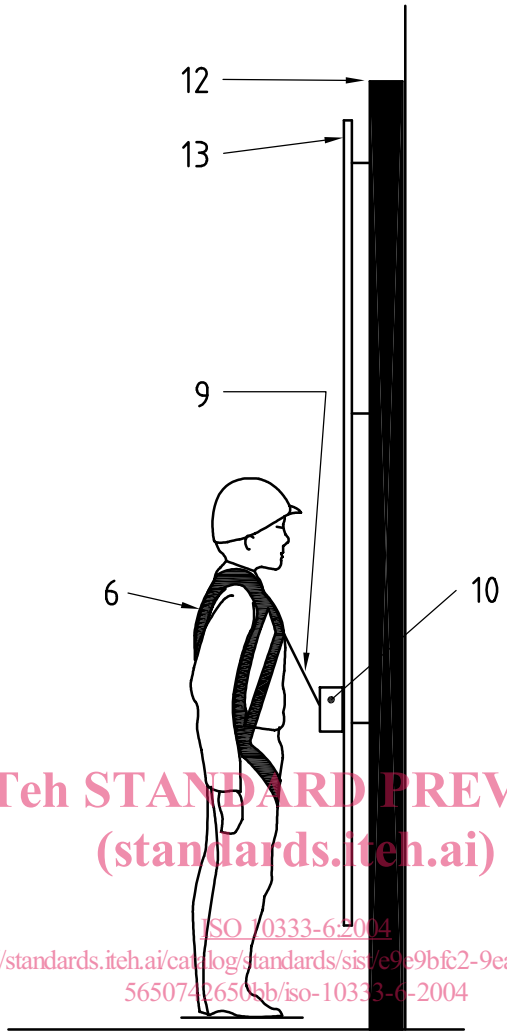
iTeh STANDARD PREVIEW
(standards.iteh.ai)
ISO 10333-6:2004
https://standards.iteh.ai/catalog/standards/sist/e9e9bfc2-9ea8-481f-ab7d-5650742650bb/iso-10333-6-2004

c) PFAS based on temporary vertical lifeline

d) PFAS based on permanent vertical lifeline

Figure 1 — Examples of fall arrest systems (PFAS) *(continued)*

© ISO 2004 – All rights reserved



iTeh STANDARD PREVIEW
(standards.iteh.ai)
ISO 10333-6:2004
https://standards.iteh.ai/catalog/standards/sist/e9e9bfc2-9ea8-481f-ab7d-565074265bbb/iso-10333-6-2004

e) PFAS based on vertical rail

Key

1 structure
2 anchor device
3 connector
4 energy-absorbing lanyard
5 fall arrest attachment on full-body harness
6 full-body harness worn by user
7 self-retracting lifeline
8 lifeline
9 connecting line
10 sliding-type fall arrester
11 tensioned lifeline
12 permanently installed ladder
13 vertical rail

Figure 1 — Examples of fall arrest systems (PFAS)

© ISO 2004 – All rights reserved