

Design of active fall-protection systems



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Preface

This is the third edition of CSA Z259.16, *Design of active fall-protection systems*. It supersedes the previous editions published in 2015 and 2004. It is part of the CSA Z259 series of Standards for components of personal fall-arrest systems.

Significant changes to this edition include the following:

- a) the term “average deployment force, F_{Avg} ” has been replaced with “clearance deployment force, F_{Clr} ”. This change addresses the common mistake of thinking that the average force on the label of fall protection equipment is suitable for use in calculations. Several ways of determining an accurate F_{Clr} are provided;
- b) a requirement has been added for periodic review of active fall protection systems designed to this Standard against the requirements of future editions of this standard as well as changes that might evolve in fall protection equipment and technologies;
- c) equations have been provided for adjusting clearances for changes to free fall height, worker weight/mass, and the deployment forces of personal energy absorbers;
- d) guidance has been added on determining the average deployment force of deformable anchors when used to anchor horizontal lifelines, so that they can be modelled as horizontal lifeline energy absorbers. This Standard now prohibits using static analysis when analyzing these systems; and
- e) the commentary in Annex [A](#) has been updated.

CSA Group gratefully acknowledges the financial and in-kind support from the Canadian government departments responsible for occupational health and safety for the development of this edition.

This Standard was prepared by the Subcommittee on Design of Active Fall-Protection Systems, under the jurisdiction of the Technical Committee on Fall Protection and the Strategic Steering Committee on Occupational Health and Safety, and has been formally approved by the Technical Committee.

This Standard has been developed in compliance with Standards Council of Canada requirements for National Standards of Canada. It has been published as a National Standard of Canada by CSA Group.

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CSA Z259.16:21

Design of active fall-protection systems

1 Scope

1.1

This Standard specifies requirements for the design and performance of complete active fall-protection systems, including travel-restraint and vertical and horizontal fall-arrest systems. This Standard is intended for engineers with expertise in designing fall-protection systems.

1.2

This Standard does not specify design or performance requirements for fall-arrest equipment or systems that have been manufactured in accordance with the requirements of an applicable CSA Z259 equipment standard.

1.3

This Standard is not to be used as a substitute for testing and certification of components of fall-protection equipment for which there is an applicable CSA Z259 equipment standard, unless the device is custom engineered for limited or site-specific applications.

1.4

This Standard does not cover the design of passive fall-protection systems such as guardrails and nets, except where such passive systems are also designed to serve as anchorage and/or anchorage connector subsystems for active fall-protection systems covered by this Standard.

1.5

This Standard does not cover the design of positioning systems.

1.6

This Standard does not cover the determination of structural strength and behaviour of components or anchorages of active fall-protection systems. It does, however, establish the safety criteria once the strengths and behaviours are known. Such strengths and behaviours are determined by analytical testing or engineering methods and by CSA Group or other design Standards for the materials and structural systems being used.

1.7

This Standard does not supersede the requirements of applicable occupational safety and health regulations.

1.8

The values given in SI units are the units of record for the purposes of this Standard. The values given in parentheses are for information and comparison only.