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**Safety of machinery — Prevention of  
unexpected start-up**

*Sécurité des machines — Prévention de la mise en marche intempestive*



Reference number  
ISO 14118:2000(E)

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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 International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 14118 was prepared by Technical Committee ISO/TC 199, *Safety of machinery*.

ISO 14118 has been prepared to be a harmonized standard in the sense of the Machinery Directive of the European Union and associated regulations of the European Free Trade Association (EFTA). It is in relationship with, in particular, the essential safety requirements expressed in subclauses 1.2.3, 1.2.6, 1.2.7, 1.6.3 and 1.6.4 of annex A of ISO/TR 12100-2:1992.

## Introduction

Keeping a machine in a stopped condition while persons are present in danger zones is one of the most important conditions of the safe use of machinery and hence one of the major aims of the machine designer and machine user.

In the past, the concepts of "operating machine" and "stopped machine" were generally unambiguous; a machine was:

- operating when its movable elements, or some of them, were moving;
- stopped when its movable elements were at rest.

Machine automation has made the relationship between "operating" and "moving" on the one hand and "stopped" and "at rest" on the other hand, more difficult to define. Automation has also increased the potential for unexpected start-up, and a significant number of accidents have occurred where machines, stopped for diagnostic work or corrective actions, started up unexpectedly.

Hazards other than mechanical hazards generated by movable elements (e.g. from a laser beam) also need to be taken into account.

The risk assessment relating to the presence of persons in a danger zone of a stopped machine needs to take into account the probability of an unexpected start-up of the hazard-generating elements.

This International Standard provides machine designers and machinery safety standard technical committees with a survey of built-in measures which can be used to prevent unexpected start-up.

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# Safety of machinery — Prevention of unexpected start-up

## 1 Scope

This International Standard specifies designed-in means aimed at preventing unexpected machine start-up (see 3.2) to allow safe human interventions in danger zones (see annex A).

This International Standard applies to unexpected start-up from all types of energy source, i.e.:

- power supply, e.g. electrical, hydraulic, pneumatic;
- stored energy due to, e.g., gravity, compressed springs;
- external influences, e.g. from wind.

## 2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO/TR 12100-1:1992, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology.*

ISO/TR 12100-2:1992, *Safety of machinery — Basic concepts — General principles for design — Part 2: Technical principles and specifications.*

ISO 14121, *Safety of machinery — Principles for risk assessment.*

IEC 60204-1:1997, *Electrical equipment of industrial machines — Part 1: General requirements.*

EN 1070, *Safety of machinery — Terminology.*

## 3 Terms and definitions

For the purposes of this International Standard, the terms and definitions given in EN 1070 and the following apply.

### 3.1

#### **start-up**

#### **machine start-up**

change from rest to motion of a machine or of one of its parts

NOTE The definition includes functions other than motion, e.g. switch-on of a laser beam.