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Safety of machinery — Safety distances to prevent danger zones being reached by the upper limbs

*Sécurité des machines — Distances de sécurité pour empêcher l'atteinte
des zones dangereuses par les membres supérieurs*

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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.

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.

International Standard ISO 13852 was prepared by the European Committee for Standardization (CEN) (as EN 294:1992) and was adopted, under a special "fast-track procedure", by Technical Committee ISO/TC 199, *Safety of machinery*, in parallel with its approval by the ISO member bodies.

Introduction

This International Standard has been prepared to be a harmonized standard in the sense of the Machinery Directive and associated EFTA regulations.

According to ISO/TR 12100-1, in general machinery is said to be safe if it is probable that the machinery can continue to be operated, adjusted, maintained, dismantled and disposed of under the conditions of its intended use¹⁾ without causing injury or damaging human health. Ways of achieving this include:

- risk reduction by design;
- safeguarding measures;
- information for use (signals, signs, instructions);
- personal protective equipment;
- safety measures taken by the users (safe working procedures, organizational means with respect to safety).

Means and measures to achieve safety have to reflect the balance between

- the benefit of reduced risk, and
- the loss of other benefits needed to achieve this.

The balance should provide an adequate level of safety for the particular risk.

One method of eliminating or reducing risks caused by machinery is to make use of safety distances preventing danger zones from being reached by the upper limbs.

In specifying safety distances, a number of aspects have to be taken into consideration, such as:

- reach situations occurring when machinery is being used;
- reliable surveys of anthropometric data, taking into account ethnic groups likely to be found in the countries concerned;
- biomechanical facts, such as compression and stretching of parts of the body and limits of joint rotation;
- technical and practical aspects.

If these aspects were further developed, the current state of the art, reflected in this International Standard, could be improved.

1) For definition of the term "intended use", see ISO/TR 12100-1.