

**BUREAU OF INDIAN STANDARDS**

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**IS 15296 : 2025  
ISO 11161 : 2025  
July 2025**

*भारतीय मानक मसौदा*

**मशीनरी की सुरक्षा — एकीकृत विनिर्माण प्रणाली — बुनियादी आवश्यकतायें**

*( दूसरा पुनरीक्षण )*

*Draft Indian Standard*

**Safety of Machinery — Integration of Machinery into a System — Basic Requirements**

*( Second Revision )*

ICS 25.040.40

Industrial Automation Systems and Robotics  
Sectional Committee, PGD 18

Last date for Comment: 07 October 2025

**NATIONAL FOREWORD**

This Indian Standard (Second Revision) which is identical with ISO 11161 : 2025 ‘Safety of machinery — Integration of machinery into a system — Basic requirements’ issued by the International Organization for Standardization (ISO) will be adopted by the Bureau of Indian Standards on the recommendation of the Industrial Automation Systems and Robotics Sectional Committee and approval of the Production and General Engineering Division Council.

This standard was originally published in 2003 which was identical with ISO 11161 : 1994 and subsequently revised in 2017. First revision of this standard was identical with ISO 11161 : 2007 ‘Safety of Machinery — Integrated Manufacturing Systems — Basic Requirements’. The second revision has been brought out to align it with ISO 11161 : 2025.

The major changes in this revision are as follows:

- The title and the scope of the standard has been modified;
- Layout for risk assessment process has been added in Fig. 2;
- Design measures for space requirement, task zone design etc. along with risk reduction measures have been added in clause 5;
- New normative annexure D on IMS Modes has been added.

The text of ISO Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

- a) Wherever the words ‘International Standard’ appear referring to this standard, they should be read as ‘Indian Standard’.
- b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

In this adopted standard, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards, which are to be substituted in their respective places, are listed below along with their degree of equivalence for the editions indicated:

<i>International Standard</i>	<i>Corresponding Indian Standard</i>	<i>Degree of Equivalence</i>
ISO 4413:2010 Hydraulic fluid power — General rules and safety requirements for systems and their components	IS 10481 : 2020/ISO 4413 : 2010 Hydraulic fluid power — General rules and safety requirements for systems and their components ( <i>second revision</i> )	Identical
ISO 4414 : 2010 Pneumatic fluid power — General rules and safety requirements for systems and their components	IS 12725 : 2021/ ISO 4414 : 2010 Pneumatic fluid power — General rules and safety requirements for systems and their components ( <i>second revision</i> )	Identical
ISO 4871 Acoustics — Declaration and verification of noise emission values of machinery and equipment	IS/ISO 4871 : 1996 Acoustics — Declaration and verification of noise emission values of machinery and equipment	Identical
ISO 12100 : 2010 Safety of machinery — General principles for design — Risk assessment and risk reduction	IS 16819 : 2018/ ISO 12100 : 2010 Safety of machinery — General principles for design — Risk reduction	Identical
ISO 13849-1:2023, Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design	IS 16810 (Part 1) : 2018/ ISO 13849-1 : 2015 Safety of machinery — Safety related parts of control systems: Part 1 General principles for design	Identical
ISO 13850 : 2015 Safety of machinery — Emergency stop function — Principles for design	IS 16818 : 2018/ ISO 13850 : 2015 Safety of machinery — Emergency stop function — Principles for design	Identical

ISO 13851 Safety of machinery — Two-hand control devices — Principles for design and selection	IS 16817 : 2020/ISO 13851 : 2019 Safety of Machinery — Two-Hand Control Devices — Principles for Design and Selection ( <i>first revision</i> )	Identical
ISO 13856 (all parts) Safety of machinery — Pressure-sensitive protective devices	IS 16835 (all parts) : 2018/ ISO 13856 (all parts) : 2013 Safety of machinery — Pressure sensitive protective devices	Identical
ISO 14118 Safety of machinery — Prevention of unexpected start-up	IS 16813 : 2019/ ISO 14118 : 2017 Safety of machinery — Prevention of Unexpected Start-Up	Identical
ISO 14119 : 2024 Safety of machinery — Interlocking devices associated with guards — Principles for design and selection	IS 16812 : 2018/ ISO 14119 : 2013 Safety of machinery — Interlocking devices associated with guards — Principles for design and selection	Identical
ISO 14120 Safety of machinery — Guards — General requirements for the design and construction of fixed and movable guards	IS 16811 : 2018/ ISO 14120 : 2015 Safety of machinery — Guards — General requirements for the design and construction of fixed and movable guards	Identical
ISO 14122 (all parts) Safety of machinery — Permanent means of access to machinery	IS 16809 (all parts) : 2018/ ISO 14122 (all parts) : 2016 Safety of machinery — Permanent means of access to machinery	Identical
ISO 14159 Safety of machinery — Hygiene requirements for the design of machinery	IS 16808 : 2018/ISO 14159 : 2002 Safety of machinery — Hygiene requirements for the design of machinery	Identical
ISO 19353 Safety of machinery — Fire prevention and fire protection	IS 16807 : 2020/ISO 19353 : 2019 Safety of machinery — Fire prevention and fire protection ( <i>first revision</i> )	Identical
ISO 20607 : 2019 Safety of machinery — Instruction handbook — General drafting principles	IS 18989 : 2024/ISO 20607 : 2019 Safety of machinery — Instruction Handbook — General drafting principles	Identical
IEC 60204-1:2021, Safety of machinery — Electrical equipment of machines — Part 1: General requirements	IS 16504 (Part 1) : 2019/IEC 60204-1 : 2016 Safety of machinery — Electrical equipment of machines: Part 1 General requirements ( <i>first revision</i> )	Identical

IEC 61496-1 : 2020 Safety of machinery — Electro-sensitive protective equipment — Part 1: General requirements and tests	IS 16502 (Part 1) : 2023/ IEC 61496-1 : 2020 Safety of machinery — Electro-sensitive protective equipment: Part 1 General requirements and tests	Identical
IEC 62046 : 2018 Safety of machinery — Application of protective equipment to detect the presence of persons	IS 17332 : 2020/ IEC 62046 : 2018 Safety of machinery — Application of protective equipment to detect the presence of persons	Identical
IEC/TS 62998-1 Safety of machinery — Safety-related sensors used for the protection of persons	IS 17520 : 2021/ IEC/TS 62998-1 : 2019 Safety of machinery — Safety-related sensors used for the protection of persons	Identical

The technical committee has reviewed the provisions of the following International Standards referred in this adopted standard and has decided that they are acceptable for use in conjunction with this standard:

<i>International Standard</i>	<i>Title</i>
ISO 11553 (all parts)	Safety of machinery — Laser processing machines
ISO 13732-1	Ergonomics of the thermal environment — Methods for the assessment of human responses to contact with surfaces — Part 1: Hot surfaces
ISO 13732-3	Ergonomics of the thermal environment — Methods for the assessment of human responses to contact with surfaces — Part 3: Cold surfaces

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 ‘Rules for rounding off numerical values (*second revision*).’ The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.