**IS 18651 (Part 28): 2024**

**ISO 7176-28: 2012**

*भारतीय मानक*

**व्हीलचेयर**

**भाग 28 सीढ़ी चढ़ने वाले उपकरणों के लिए अपेक्षाएँ और परीक्षण पद्धतियाँ**

*Indian Standard*

**Wheelchairs**

**Part 28 Requirements and test methods for stair-climbing devices**

**ICS 11.180.10**

Artificial Limbs, Rehabilitation Appliances and Equipment for the Persons with Disability Sectional Committee, MHD 09

NATIONAL FOREWORD

This Indian Standard (Part 28) which is identical to ISO 7176-28:2012, ‘Wheelchairs Part 28 Wheelchairs Part 28 Requirements and test methods for stair-climbing devices’ issued by the International Organization for Standardization (ISO), was adopted by the Bureau of Indian Standards on the recommendation of the Artificial Limbs, Rehabilitation Appliances and Equipment for the Persons with Disability Sectional Committee and approval of the Medical Equipment and Hospital Planning Division Council.

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:

1. Wherever the words ‘International Standard’ appear referring to this standard, they should be read as ‘Indian Standard’
2. 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:

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| *International Standard* | *Corresponding Indian Standard* | *Degree of*  *Equivalence* |
| ISO 7176-l Wheelchairs - Part 1: Determination of static stability. | IS 18651 (Part 1): 2024/ISO 7176-1: 2014 Wheelchairs Part 1 Determination of static stability | Identical |
| ISO 7176-2 Wheelchairs - Part 2: Determination of dynamic stability of electric wheelchairs. | IS 18651 (Part 2) : 2024/ISO 7176-2 : 2017 Wheelchairs Part 2 Determination of dynamic stability of electrically powered wheelchairs | Identical |
| ISO 7176-3 Wheelchairs - Part 3: Determination of efficiency of brakes. | IS 18651 (Part 3) : 2024/ISO 7176-3 : 2012 Wheelchairs Part 3 Determination of effectiveness of brakes | Identical |
| ISO 7176-4 Wheelchairs - Part 4: Determination of energy consumption of electric wheelchairs and scooters - Theoretical range. | IS 18651 (Part 4) : 2024/ISO 7176-4 : 2008 Wheelchairs Part 4 Energy consumption of electric wheelchairs and scooters for determination of theoretical distance range | Identical |
| ISO 7176-5 Wheelchairs - Part 5: Determination of overall dimensions, mass and turning space. | IS 18651 (Part 5): 2024/ISO 7176-5 : 2008 Wheelchairs Part 5 Determination of dimensions mass and manoeuvring space | Identical |
| ISO 7176-6 Wheelchairs - Part 6: Determination of maximum speed, acceleration and retardation of electric wheelchairs. | IS 18651 (Part 6) : 2024/ISO 7176-6 : 2018 Wheelchairs Part 6 Determination of maximum speed of electrically powered wheelchairs | Identical |
| ISO 7176-7 Wheelchairs - Part 7: Method of measurement of seating and wheel dimensions. | IS 18651 (Part 7) : 2024/ISO 7176-7 : 1998 Wheelchairs Part 7: Measurement of seating and wheel dimensions | Identical |
| ISO 7176-8 Wheelchairs - Part 8: Requirements and test methods for static, impact and fatigue strengths. | IS 18651 (Part 8) : 2024/ISO 7176-8 : 2014 Wheelchairs Part 8 Requirements and test methods for static impact and fatigue strengths | Identical |
| ISO 7176-9 Wheelchairs - Part 9: Climatic tests for electric wheelchairs. | IS 18651 (Part 9) : 2024/ISO 7176-9 : 2009 Wheelchairs Part 9 Climatic tests for electric wheelchairs | Identical |
| ISO 7176-10 Wheelchairs - Part 10: Determination of obstacle-climbing ability of electric wheelchairs. | IS 18651 (Part 10) : 2024/ISO 7176-10 : 2008 Wheelchairs Part 10 Determination of obstacle-climbing ability of electrically powered wheelchairs | Identical |
| ISO 7176-11 Wheelchairs - Part 11: Test dummies. | IS 18651 (Part 11) : 2024/ISO 7176-11 : 2012 Wheelchairs Part 11 Test dummies | Identical |
| ISO 7176-13 Wheelchairs - Part 13: Determination of coefficient of friction of test surfaces. | IS 18651 (Part 13) : 2024/ISO 7176-13 : 1989 Wheelchairs Part 13 Determination of coefficient of friction of test surfaces | Identical |
| ISO 7176-14 Wheelchairs - Part 14: Power and control systems for electric wheelchairs – Requirements and test methods. | IS 18651 (Part 14) : 2024/ISO 7176-14 : 2022 Wheelchairs Part 14 Power and control systems for electrically powered wheelchairs and scooters Requirements and test methods | Identical |
| ISO 7176-15 Wheelchairs — Part 15: Requirements for information disclosure, documentation and labelling | IS 18651 (Part 15) : 2024/ISO 7176-15 : 1996 Wheelchairs Part 15 Requirements for information disclosure documentation and labelling | Identical |
| ISO 7176-19 Wheelchairs — Part 19: Wheeled mobility devices for use as seats in motor vehicles | IS 18651 (Part 19) : 2024/ISO 7176-19 : 2022 Wheelchairs Part 19 Wheelchairs for use as seats in motor vehicles | Identical |
| ISO 7176-21:2009, Wheelchairs — Part 21: Requirements and test methods for electromagnetic compatibility of electrically powered wheelchairs and scooters, and battery chargers | IS 18651 (Part 21) : 2024/ISO 7176-21 : 2009 Wheelchairs Part 21 Requirements and test methods for electromagnetic compatibility of electrically powered wheelchairs and scooters and battery chargers | Identical |
| ISO 7176-22 Wheelchairs — Part 22: Set-up procedures | IS 18651 (Part 22) : 2024/ISO 7176-22 : 2014 Wheelchairs Part 22: Set-up procedures | Identical |
| ISO 7176-26, Wheelchairs — Part 26: Vocabulary | IS/ISO 7176-26 : 2007 Wheelchairs: Part 26 vocabulary | Identical |
| ISO 14971, Medical devices — Application of risk management to medical devices | IS/ISO 14971: 2019 Medical devices - Application of risk management to medical devices (*first revision)* | 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:

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| *International Standard* | *Title* |
| ISO 3880-1 | Building construction — Stairs — Vocabulary |
| ISO 7176-16 | Wheelchairs — Part 16: Resistance to ignition of upholstered parts – Requirements and test methods |

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 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 same as that of the specified value in this standard.

This standard also makes a reference to the BIS Certification Marking of the product, details of which is given in National Annex A.

**NATIONAL ANNEX A**

*(National Foreword)*

**A-1 BIS CERTIFICATION MARKING**

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the Bureau of Indian Standards Act, 2016 and the Rules and Regulations framed thereunder, and the product(s) may be marked with the Standard Mark.