

BUREAU OF INDIAN STANDARDS

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भारतीय मानक मसौदा

व्हीलचेयर

भाग 30 बैठने वाले के आसन बदलने के लिए व्हीलचेयर – परीक्षण विधियाँ और आवश्यकताएँ

Draft Indian Standard

Wheelchairs

Part 30 Wheelchairs for changing occupant posture – Test methods and requirements

[ICS 11.180.10]

Artificial Limbs, Rehabilitation Appliances and Equipment Last date for comments:
for the Persons with Disability Sectional Committee, MHD 09 5 June, 2024

NATIONAL FOREWORD

(Adoption clause will be added later)

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:

- Wherever the words ‘International Standard’ appear referring to this standard, they should be read as ‘Indian Standard’
- 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 7176-1: 2014 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: 2017 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: 2012 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: 2008 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: 2008 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 7176-8: 2014 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 7176-14 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, 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 7176-25, Wheelchairs — Part 25: Batteries and chargers for powered wheelchairs	IS 18651 (Part 25) : 2024/ISO 7176-25 : 2022 Wheelchairs Part 25 Lead-acid batteries and chargers for powered wheelchairs Requirements and test methods	Identical
ISO 7176-26, Wheelchairs — Part 26: Vocabulary	IS/ISO 7176-26 : 2007 Wheelchairs: Part 26 vocabulary	Identical

In this text, reference has been made to ISO 7176-6: 2001 which has been revised by ISO as ISO 7176-6:2018 Wheelchairs Part 6: Determination of maximum speed of electrically powered wheelchairs.

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:

International Standard *Title*

ISO 16840-3:2014	Wheelchair seating — Part 3: Determination of static, impact and repetitive load strengths for postural support devices
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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.

Introduction

Wheelchairs which can alter the occupant's position in relation to the ground, in one or multiple planes can be an important factor in the appropriate selection of a wheelchair for people with disability and/or aged persons. These wheelchairs and their adjustable body support system can allow the occupant to engage in their environment, or assist in altering pressure distribution and/or postural position.

These features include but are not limited to:

- recline (where the angle of a back support can be changed),
- tilt (where the angle of a seat surface can be changed),
- elevate (where the seat height changes in the vertical plane), and
- stand-up function (where the back support, seat surface, arm supports, lower leg and foot supports can be changed to support the occupant in a standing position).

Scope

This document specifies the test methods and requirements for determining the safety and performance of a manual and/or power wheelchair that incorporates technology to alter the posture of the wheelchair occupant, which are either electrically or manually operated by the occupant or assistant during normal wheelchair use. This can include recline, tilt, elevate and stand-up mechanisms or a combination of these. In order for a wheelchair to be able to recline, tilt, elevate and/or stand-up, the wheelchair requires additional mechanisms and mechanical structures to allow these features to operate. This document specifies the different functional and strength tests required to test these wheelchairs in critical configurations of their adjustable range.

This document does not cover wheelchairs where the only operator adjustable body support system (OABSS) is adjustable limb or head postural support devices alone (e.g. elevating leg supports).

This document does not include wheelchair and postural support device customization during initial or subsequent setup of a wheelchair for an individual occupant. It also does not reflect other factors that can influence wheelchair stability such as occupant movement, cushion thickness, and the addition of ancillary equipment (e.g. respiratory support items).

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.

The technical content of the document has not been enclosed as it is identical with the corresponding ISO standard. For details, please refer to ISO 7176-30:2018 or kindly contact:

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