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Wheelchairs —

Part 8:

Requirements and test methods for static, impact and fatigue strengths

Fauteuils roulants —

*Partie 8: Prescriptions et méthodes d'essai pour la résistance statique,
la résistance aux chocs et la résistance à la fatigue*



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Contents

	Page
Foreword	v
Introduction	vii
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Requirements	2
4.1 Strength requirements.....	2
4.2 Disclosure requirements.....	3
5 Test apparatus	3
6 Preparation of the test wheelchair	13
6.1 Setup and adjustment of the wheelchair.....	13
6.2 Test dummies.....	14
6.3 Preparation of wheelchair.....	14
6.4 Records.....	14
6.5 Safety during testing.....	14
7 Sequence of tests	14
8 Test methods for static strength	15
8.1 Principle.....	15
8.2 Wheelchair preparation.....	15
8.3 Selection of loading pad.....	15
8.4 Arm supports: Resistance to downward forces.....	15
8.5 Foot supports: Resistance to downward forces.....	16
8.6 Tipping levers.....	19
8.7 Handgrips.....	21
8.8 Arm supports: Resistance to upward forces.....	22
8.9 Foot supports: Resistance to upward forces.....	24
8.10 Push handles: Resistance to upward load.....	27
8.11 Scooter steering handles: Resistance to forward forces.....	29
8.12 Scooter steering handles: Resistance to rearward forces.....	30
8.13 Scooter steering handles: Resistance to downward forces.....	31
8.14 Scooter steering handles: Resistance to upward forces.....	32
9 Test methods for impact strength	33
9.1 Principle.....	33
9.2 Wheelchair preparation.....	33
9.3 Back support: Resistance to impact.....	33
9.4 Handrim: Resistance to impact.....	35
9.5 Castors: Resistance to impact.....	36
9.6 Foot supports: Resistance to impact.....	38
9.6.1 General.....	38
9.6.2 Preparation.....	38
9.6.3 Lateral impact.....	38
9.6.4 Longitudinal impact.....	40
9.7 Impacts on anti-tip devices.....	40
9.7.1 Upward impacts on anti-tip devices.....	40
9.7.2 Forward or rearward impacts on anti-tip devices.....	41
9.7.3 Lateral impacts on anti-tip devices.....	41
10 Fatigue tests	43
10.1 Principle.....	43
10.2 Preparation of test wheelchair for fatigue tests.....	43
10.3 Multi-drum test.....	44

This is a preview of "ISO 7176-8:2014". [Click here to purchase the full version from the ANSI store.](#)

10.3.1	Test machine settings	44
10.3.2	Manual wheelchair tests	44
10.3.3	Preliminary power measurement for electrically powered wheelchairs	44
10.3.4	Electrical wheelchair tests	45
10.4	Drop test	46
10.5	Fatigue test of manually operated parking brakes	48
11	Evaluation of test results	49
11.1	Evaluation and records of individual tests	49
11.2	Evaluation at end of testing	49
12	Test report	49
Annex A	(informative) Principles applied to derive static test loads	51
Annex B	(informative) Design considerations	61
Annex C	(informative) Derivation of pendulum swing angle for castor and foot support impact tests	62
Annex D	(informative) Calculation of pendulum centre of percussion	65
Bibliography	67

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT), see the following URL: [Foreword — Supplementary information](#).

The committee responsible for this document is ISO/TC 173, *Assistive products for persons with a disability*, Subcommittee SC 1, *Wheelchairs*.

This second edition cancels and replaces the first edition (ISO 7176-8:1998), which has been technically revised.

ISO 7176 consists of the following parts, under the general title *Wheelchairs*:

- *Part 1: Determination of static stability*
- *Part 2: Determination of dynamic stability of electric wheelchairs*
- *Part 3: Determination of the effectiveness of brakes*
- *Part 4: Energy consumption of electric wheelchairs and scooters for determination of theoretical distance range*
- *Part 5: Determination of dimensions, mass and manoeuvring space*
- *Part 6: Determination of maximum speed, acceleration and deceleration of electric wheelchairs*
- *Part 7: Measurement of seating and wheel dimensions*
- *Part 8: Requirements and test methods for static, impact and fatigue strengths*
- *Part 9: Climatic tests for electric wheelchairs*
- *Part 10: Determination of obstacle-climbing ability of electrically powered wheelchairs*
- *Part 11: Test dummies*
- *Part 13: Determination of coefficient of friction of test surfaces*
- *Part 14: Power and control systems for electrically powered wheelchairs and scooters – Requirements and test methods*

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- *Part 15: Requirements for information disclosure, documentation and labelling*
- *Part 16: Resistance to ignition of postural support devices*
- *Part 19: Wheeled mobility devices for use as seats in motor vehicles*
- *Part 21: Requirements and test methods for electromagnetic compatibility of electrically powered wheelchairs and scooters, and battery chargers*
- *Part 22: Set-up procedures*
- *Part 25: Batteries and chargers for powered wheelchairs*
- *Part 26: Vocabulary*
- *Part 28: Requirements and test methods for stair-climbing devices*

A technical report (ISO/TR 13570-1) is also available giving a simplified explanation of these parts of ISO 7176.

This corrected version of ISO 7176-8:2014 incorporates the following correction:

- In [9.7.1](#), the last sentence of the third paragraph has been amended.

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Introduction

This part of ISO 7176 has been an important part of the strength testing of wheelchairs since its publication in 1998. It contains test methods and sets minimum requirements for static, impact, and fatigue strength of both the overall wheelchair and individually stressed components.

Several parts of this International Standard have been reviewed. In particular:

- the fatigue testing elements, including the speed and size of slat of the two-drum test machine, and the number of test cycles for both two drum and drop tests have been reviewed through empirical testing and confirmed;
- the failure criteria have been clarified, and permissible adjustments and repairs more clearly defined to minimize variation between laboratories;
- a more precisely defined setup procedure for the reference configuration of adjustable wheelchairs as given in ISO 7176-22;
- static, impact, and repeated load test procedures for Postural Support Devices (PSDs) have been revised and are contained in ISO 16840-3.

It is anticipated that all parts of this International Standard will continue to be developed and future revisions may include the results of ongoing work in the following areas:

- consideration of whether the fatigue test requirements should be revised for wheelchairs intended for use in less resourced settings;
- review of the test methods and apparatus to facilitate testing in less resourced settings;
- further development of the test dummies to improve the way in which they load the backs of test wheelchairs and, in particular, to improve their suitability for use with wheelchairs with low back supports.