

ISO 7176-8:2014-12 (E)

Wheelchairs - Part 8: Requirements and test methods for static, impact and fatigue strengths

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
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