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 Termsanddefinitions 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