DIN EN 13684:2018-12 (E)

Garden equipment - Pedestrian controlled lawn aerators and scarifiers - Safety

Contents

Page

European foreword 5

Introduction 6

1 Scope 7

2 Normative references 7

3 Terms and definitions 8

4 List of significant hazards 12

5 Safety requirements and/or protective measures 16
5.1 General 16
5.2 Power driven components and the tines 16
5.3 Guard attachment 16
5.4 Hot exhaust surfaces 16
5.4.1 General 16
5.4.2 Test equipment and method of test 17
5.4.3 Test acceptance 18
5.5 Protection from exhaust fumes 18
5.6 Pressurized components 18
5.7 Liquid spillage 18
5.8 Controls 18
5.8.1 General 18
5.8.2 Identification of controls 19
5.8.3 Operator presence control 19
5.8.4 Traction drive 19
5.9 Electrical requirements 19
5.9.1 General 19
5.9.2 Low voltage battery circuits (not including magneto grounding circuits) 20
5.9.3 Terminals and uninsulated electrical parts 20
5.9.4 Electromagnetic immunity 20
5.10 Stopping and starting 20
5.10.1 Engine 20
5.10.2 Tines in transport position 21
5.11 Braking requirements 21
5.11.1 General 21
5.11.2 Service brake 22
5.11.3 Parking brake 22
5.12 Handles 22
5.12.1 Construction 22
5.12.2 Foot probe test 23
5.13 Thrown object hazard 25
5.13.1 General 25
5.13.2 Thrown object test 25
5.13.3 Test results 27
5.13.4 Test acceptance (pass/fail criteria) 27
5.13.5 Additional testing 27
5.14 Strength of tines and tine mountings 27
5.14.1 General 27

DIN EN 13684:2018-12 EN 13684:2018 (E) 5.14.2 Test acceptance 29
5.15 General construction -- Guarding and shielding 29
5.16 Noise 33
5.16.1 Noise reduction as a safety requirement 33
5.16.2 Verification of requirements on noise -- Noise measurement 33
5.17 Vibration 33
5.17.1 Reduction by design and protective measures 33
5.17.2 Reduction by information 34
5.17.3 Vibration measurement 34
5.18 Stability requirements and test method 34
5.18.1 General 34
5.18.2 Stability test procedure 34
5.18.3 Test acceptance 35

6 Information for use 35
6.1 Instruction for use 35
6.2 Technical information 38
6.3 Marking 38
6.3.1 Minimum marking 38
6.3.2 Warnings 39
6.3.3 Marking durability 39
6.3.4 Test 39

Annex A (normative) Safety signs and symbols 40

A.1 General 40
A.2 Safety signs and symbols 41

Annex B (informative) Safety instructions 43

B.1 General 43
B.2 Safe operation practices 43
B.2.1 Training 43
B.2.2 Preparation 43
B.2.3 Operation 44
B.2.4 Maintenance and storage 45

Annex C (normative) Noise test code -- Engineering method (grade 2) 46

C.1 Scope 46
C.2 A-weighted sound power level determination 46
C.3 A-weighted emission sound pressure level measurement 48
C.4 Requirements for test floor 49
C.4.1 Artificial surface 49
C.4.2 Natural grass 49
C.5 Installation, mounting and operating conditions 49
C.6 Measurement uncertainty 50
C.7 Information to be recorded and reported 50
C.8 Declaration and verification of noise emission values 51

DIN EN 13684:2018-12 EN 13684:2018 (E) Annex D (informative) Example of a material and construction fulfilling the requirements for an artificial surface 52

D.1 Material 52
D.2 Construction 52

Annex E (normative) Vibration 54

E.1 Quantities to be measured 54
E.2 Instrumentation 54
E.2.1 General 54
E.2.2 Fastening of transducer 54

E.2.3 Calibration 54
E.3 Measurement direction and measurement location 54
E.3.1 Measurement direction 54
E.3.2 Measurement location 54
E.4 Test procedure 54
E.5 Measurement procedure 55
E.6 Determination of the measurement result 55

Annex F (normative) Tines stopping time 58

F.1 General 58
F.2 Measurement of tines stopping time 58

Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC aimed to be covered 60

Bibliography 61