DIN EN 16952:2022-07 (E)

Agricultural machinery - Rough-terrain Work Platforms for Orchard's operations (WPO) - Safety (includes Amendment :2021)

Contents

Page

European foreword 4

Introduction 5

1 Scope 6

2 Normative references 7

3 Terms and definitions 8

4 List of significant hazards 11

5 Safety requirements and/or measures 20
5.1 General 20
5.2 Structural and stability calculations 20
5.3 Chassis 20
5.4 Extending structure 23
5.4.1 Methods to avoid overturning and exceeding permissible stresses 23
5.4.2 Extending structure extension and retraction 24
5.4.3 Protection against hazards related to the movements of the extending structure 24
5.4.4 Position retention of the work platform 25
5.4.5 Speed for raising and lowering of the work platform 25
5.5 Extending structure drive systems 25
5.6 Work platform 26
5.7 Controls 28
5.8 Electrical equipment 30
5.9 Hydraulic systems 31
5.10 Hydraulic cylinders 32
5.10.1 Structural design 32
5.10.2 Safety device for load holding cylinders 37
5.11 Safety devices 38

6 Verification of the safety requirements and/or measures 38
6.1 Examinations and tests 38
6.1.1 General 38
6.1.2 Design check 39
6.1.3 Manufacturing check 39
6.1.4 Tests 40
6.2 Type tests of WPOs 46
6.2.1 General 46
6.2.2 Tests before placing on the market 46
6.3 Validation of safety functions and performance levels 47

7 Information for use 47
7.1 Instruction handbook 47
7.1.1 General 47
7.2 Marking 50

Annex A (normative) Calculations 53

A.1 General 53

A.2 Loads and forces 53
A.3 Determination of loads and forces 53
A.4 Stability calculations 57
A.5 Structural calculations 58

Annex B (normative) Requirements for protective curtains 65

B.1 General 65
B.2 Tensile resistance test 65
B.3 Perforation resistance test 65
B.4 Wear resistance test 65

Annex C (normative) Additional requirements for wireless controls and control systems 66

C.1 General 66
C.2 Unauthorized use 66
C.3 Control limitation 66
C.4 Stop 66
C.5 Serial data communication 67
C.6 Use of more than one operator control station 67
C.7 Battery-powered operator control stations 67
C.8 Receiver 67
C.9 Warnings 67
C.10 Information for use 67

Annex D (informative) Calculation examples - factor "z", kerb test 68

Annex E (informative) Examples of Machines 72

E.1 Examples of Machines covered by the standard 72
E.2 Examples of Machines excluded from the scope of the standard 74

Annex ZA (informative) !Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC aimed to be covered" 78

Bibliography 82