ISO 3691-2:2016-01 (E)

Industrial trucks - Safety requirements and verification - Part 2: Self-propelled variable-reach trucks

Contents

Page

Foreword v

Introduction vi

1 Scope 1

2 Normative references 1

3 Terms and definitions 3

4 Safety requirements and/or protective measures 5
4.1 General 5
4.1.1 Overall requirements 5
4.1.2 Normal climatic conditions 5
4.1.3 Normal operating conditions 5
4.1.4 Sharp edges 6
4.1.5 Electrical requirements 6
4.1.6 Stored energy components 6
4.2 Starting/moving 6
4.2.1 Unauthorized starting 6
4.2.2 Unintended movement and inadvertent activation 6
4.3 Brakes 7
4.3.1 General 7
4.3.2 Failure of energy supply 7
4.4 Manual control actuator 7
4.4.1 General 7
4.4.2 Travel and braking controls 7
4.4.3 Steering controls 8
4.4.4 Load-handling controls 8
4.4.5 Other controls 9
4.4.6 Marking 9
4.5 Power systems and accessories 9
4.5.1 Exhaust system 9
4.5.2 Cooling system 9
4.5.3 Fuel tanks 10
4.5.4 Access to engine and other compartments 10
4.5.5 Liquefied petroleum gas (LPG)-powered trucks 10
4.6 Systems for telescoping, lifting and tilting 12
4.6.1 Lift chains 12
4.6.2 Hydraulic lifting, telescoping and carriage tilting 13
4.6.3 Hydraulic systems 14
4.6.4 Fork arms 14
4.6.5 Fork-arm extensions 14
4.6.6 Fork carriers 14
4.6.7 Load-handling attachments 15
4.7 Operator positions 15
4.7.1 Dimensions 15
4.7.2 Operator's seat 15
4.7.3 Operator restraint 16
4.7.4 Operator access and egress 16
4.7.5 Protection from road wheels and objects thrown up by the wheels 17

4.7.6 Protection from burning ... 17
4.7.7 Protection against crushing, shearing and trapping ... 17
4.8 Stability ... 17
4.8.1 General ... 17
4.8.2 Specific operating conditions ... 18
4.8.3 Longitudinal stability determination ... 18
4.9 Protective devices ... 18

4.9.1 Overhead guard ... 18
4.9.2 Load backrest extension ... 18
4.9.3 Roll-over protective structures ... 19
4.9.4 Warning device ... 19
4.9.5 Starter battery requirements ... 19
4.10 Visibility and lighting ... 19
4.10.1 Visibility ... 19
4.10.2 Lighting ... 19
4.11 Operator's cab ... 19
4.11.1 General ... 19
4.11.2 Doors and windows ... 19
4.11.3 Fire resistance ... 20
4.11.4 Ventilation ... 20
4.11.5 Heating, air conditioning and ventilation system ... 20
4.11.6 Air filters ... 21
4.11.7 Demisting and defrosting ... 21
4.11.8 Pressurization system ... 21
4.11.9 Wipers and washers ... 21
4.11.10 Access and an emergency exit ... 22
4.11.11 Storage of instruction handbook ... 22
4.11.12 Additional operator's position ... 22
4.12 Provisions for transportation of the truck and removable attachments ... 22
4.13 Environmental requirements ... 22
4.13.1 Noise emissions ... 22
4.13.2 Vibration ... 22
4.13.3 Electromagnetic compatibility (EMC) ... 23
4.14 Devices for towing ... 23

5 Verification of safety requirements and/or protective measures ... 23
5.1 General ... 23
5.2 Structural verification ... 23
5.2.1 Test loads ... 23
5.2.2 Static test ... 23
5.2.3 Dynamic test ... 24
5.3 Functional verification ... 24

6 Information for use ... 25
6.1 General ... 25
6.2 Instruction handbook ... 25
6.2.1 Truck/attachments ... 25
6.2.2 Operation of truck ... 25
6.2.3 Details for battery powered trucks ... 26
6.2.4 Details for internal-combustion-engine powered trucks ... 26
6.2.5 Service and maintenance ... 27
6.2.6 Transportation, commissioning and storage ... 27
6.2.7 Truck modification ... 27
6.3 Marking ... 28
6.3.1 Information plates ... 28
6.3.2 Load chart ... 29
6.3.3 Information plate for trucks operating in special conditions ... 31
6.3.4 Other information ... 31
6.3.5 Languages ... 32
6.3.6 Operator restraint ... 32

Annex A (informative) Rated capacity of truck 33

Annex B (informative) List of significant hazards 36

Bibliography 41