ISO 3691-2:2023-03 (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 2

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 6
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 8
4.4.3 Steering controls 9
4.4.4 Load-handling controls 9
4.4.5 Other controls 9
4.4.6 Marking 10
4.5 Power systems and accessories 10
4.5.1 Exhaust system 10
4.5.2 Cooling system 10
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 11
4.6 Systems for telescoping, lifting and tilting 13
4.6.1 Lift chains 13
4.6.2 Hydraulic lifting, telescoping and carriage tilting 14
4.6.3 Hydraulic systems 14
4.6.4 Fork arms 15
4.6.5 Fork-arm extensions 15
4.6.6 Fork carriers 15
4.6.7 Load-handling attachments 15
4.7 Operator positions 16
4.7.1 Dimensions 16
4.7.2 Operator's seat 16
4.7.3 Operator restraint 17
4.7.4 Operator access and egress 17
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 18

4.8 Stability 18
4.8.1 General 18
4.8.2 Specific operating conditions 18
4.8.3 Longitudinal stability determination 19
4.9 Protective devices 19
4.9.1 Overhead guard 19
4.9.2 Load backrest extension 19
4.9.3 Roll-over protective structures (ROPSs) 19
4.9.4 Warning device 19
4.9.5 Starter battery requirements 20
4.10 Visibility and lighting 20
4.10.1 Visibility 20
4.10.2 Lighting 20
4.11 Operator's cab 20
4.11.1 General 20
4.11.2 Doors and windows 20
4.11.3 Fire resistance 21
4.11.4 Ventilation 21
4.11.5 Heating, air conditioning and ventilation system 21
4.11.6 Demisting and defrosting 22
4.11.7 Pressurization system 22
4.11.8 Wipers and washers 22
4.11.9 Access and an emergency exit 23
4.11.10 Storage of instruction handbook 23
4.11.11 Additional operator's position 23
4.12 Provisions for transportation of the truck and removable attachments 23
4.13 Environmental requirements 23
4.13.1 Noise emissions 23
4.13.2 Vibration 23
4.13.3 Electromagnetic compatibility (EMC) 24
4.14 Devices for towing 24

5 Verification of safety requirements and/or protective measures 24
5.1 General 24
5.2 Structural verification 24
5.2.1 Test loads 24
5.2.2 Static test 25
5.2.3 Dynamic test 25
5.3 Functional verification 25

6 Information for use 26
6.1 General 26
6.2 Instruction handbook 26
6.2.1 Truck 26
6.2.2 Operation of truck 26
6.2.3 Details for battery-powered trucks 27
6.2.4 Details for internal-combustion-engine-powered trucks 28
6.2.5 Service and maintenance 28
6.2.6 Transportation, commissioning and storage 28
6.2.7 Truck modification 29
6.3 Marking 29
6.3.1 Information plates 29
6.3.2 Load chart 30
6.3.3 Information plate for trucks operating in special conditions 32
6.3.4 Other information 33
6.3.5 Languages 33
6.3.6 Operator restraint 33

Annex A (informative) Rated capacity of truck 34
Annex B (informative) List of significant hazards 37

Annex C (normative) Verification of essential health and safety requirements 42

Bibliography 46