# DIN EN ISO 3691-2:2023-11 (E)

## Industrial trucks - Safety requirements and verification - Part 2: Self-propelled variable-reach trucks (ISO 3691-2:2023)

## Contents

Page


**European foreword** ... **4**

**Foreword** ... **5**

**Introduction** ... **6**

**1 Scope** ... **7**

**2 Normative references** ... **8**

**3 Terms and definitions** ... **9**

**4 Safety requirements and/or protective measures** ... **11**

4.1 General ... 11

4.1.1 Overall requirements ... 11

4.1.2 Normal climatic conditions ... 11

4.1.3 Normal operating conditions ... 12

4.1.4 Sharp edges ... 12

4.1.5 Electrical requirements ... 12

4.1.6 Stored energy components ... 12

4.2 Starting/moving ... 12

4.2.1 Unauthorized starting ... 12

4.2.2 Unintended movement and inadvertent activation ... 12

4.3 Brakes ... 13

4.3.1 General ... 13

4.3.2 Failure of energy supply ... 13

4.4 Manual control actuator ... 13

4.4.1 General ... 13

4.4.2 Travel and braking controls ... 14

4.4.3 Steering controls ... 15

4.4.4 Load-handling controls ... 15

4.4.5 Other controls ... 15

4.4.6 Marking ... 16

4.5 Power systems and accessories ... 16

4.5.1 Exhaust system ... 16

4.5.2 Cooling system ... 16

4.5.3 Fuel tanks ... 16

4.5.4 Access to engine and other compartments ... 16

4.5.5 Liquefied petroleum gas (LPG)-powered trucks ... 17

4.6 Systems for telescoping, lifting and tilting ... 19

4.6.1 Lift chains ... 19

4.6.2 Hydraulic lifting, telescoping and carriage tilting ... 20

4.6.3 Hydraulic systems ... 20

4.6.4 Fork arms ... 21

4.6.5 Fork-arm extensions ... 21

4.6.6 Fork carriers ... 21

4.6.7 Load-handling attachments ... 21

4.7 Operator positions ... 22

4.7.1 Dimensions ... 22

4.7.2 Operator's seat ... 22

4.7.3 Operator restraint ... 23

4.7.4 Operator access and egress ... 23

4.7.5 Protection from road wheels and objects thrown up by the wheels ... 23

4.7.6 Protection from burning ... 23

4.7.7 Protection against crushing, shearing and trapping
4.8 Stability
4.8.1 General 24
4.8.2 Specific operating conditions 24
4.8.3 Longitudinal stability determination 24
4.9 Protective devices 24
4.9.1 Overhead guard 25
4.9.2 Load backrest extension 25
4.9.3 Roll-over protective structures (ROPSs) 25
4.9.4 Warning device 25
4.9.5 Starter battery requirements 25
4.10 Visibility and lighting 25
4.10.1 Visibility 26
4.10.2 Lighting 26
4.11 Operator's cab 26
4.11.1 General 26
4.11.2 Doors and windows 26
4.11.3 Fire resistance 26
4.11.4 Ventilation 26
4.11.5 Heating, air conditioning and ventilation system 27
4.11.6 Demisting and defrosting 27
4.11.7 Pressurization system 27
4.11.8 Wipers and washers 28
4.11.9 Access and an emergency exit 28
4.11.10 Storage of instruction handbook 28
4.11.11 Additional operator's position 29
4.12 Provisions for transportation of the truck and removable attachments 29
4.13 Environmental requirements 29
4.13.1 Noise emissions 29
4.13.2 Vibration 29
4.13.3 Electromagnetic compatibility (EMC) 29
4.14 Devices for towing 29

**5 Verification of safety requirements and/or protective measures** 30
5.1 General 30
5.2 Structural verification 30
5.2.1 Test loads 30
5.2.2 Static test 30
5.2.3 Dynamic test 30
5.3 Functional verification 31

**6 Information for use** 31
6.1 General 31
6.2 Instruction handbook 32
6.2.1 Truck 32
6.2.2 Operation of truck 32
6.2.3 Details for battery-powered trucks 32
6.2.4 Details for internal-combustion-engine-powered trucks 32
6.2.5 Service and maintenance 33
6.2.6 Transportation, commissioning and storage 34
6.2.7 Truck modification 34
6.3 Marking 34
6.3.1 Information plates 35
6.3.2 Load chart 35
6.3.3 Information plate for trucks operating in special conditions 35
6.3.4 Other information 36
6.3.5 Languages 38
6.3.6 Operator restraint 39

**Annex A** (informative) **Rated capacity of truck** 39

**Annex B** (informative) **List of significant hazards** 40

**Annex C** (normative) **Verification of essential health and safety requirements** 43

**Bibliography** 48



52