

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	24
	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
		Verification of safety requirements and/or protective measures	30
		5	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
		Information for use	31
		6	32
	6.1	General	32
	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