

DIN EN 1756-2:2009-12 (E)

Tail lifts - Platform lifts for mounting on wheeled vehicles - Safety requirements - Part 2: Tail lifts for passengers (includes Amendment A1:2009)

Contents		Page
Foreword		5
Introduction		6
1	Scope	7
2	Normative references	7
3	Terms and definitions	8
4	List of hazards	11
5	Safety requirements and/or measures	21
5.1	General requirements	21
5.1.1	Sizes and capacities of tail lifts	21
5.2	Working area	22
5.2.1	Lighting	22
5.2.2	Hand rails	22
5.3	Manual effort	23
5.4	Operating speeds	23
5.4.1	General	23
5.4.2	Vertical speed	23
5.4.3	Opening and closing speeds	23
5.4.4	Tilting speed	23
5.5	Passenger stability	23
5.5.1	Rotary lifts	23
5.5.2	Stop devices	23
5.6	Limitations of travel	24
5.7	Layout of wires and pipes	24
5.8	Unauthorised operation	24
5.9	Isolation of energy sources	24
5.10	Tail lift stowage	25
5.10.1	Indication	25
5.10.2	Security	25
5.11	Crushing and shearing	25
5.12	Structure working coefficients	25
5.13	Platform	25
5.13.1	Surface	25
5.13.2	Tail lift used as a link bridge	26
5.13.3	Visibility of platform	26
5.13.4	Protection of pedestrians	26
5.14	Drive systems	26
5.14.1	Unintentional movements	26
5.14.2	Mechanical suspension systems	27
5.14.3	Hydraulic systems	28
5.15	Safety devices	29
5.15.1	Safety mechanisms	29
5.15.2	Springs inside safety devices	30
5.16	Loading control	30
5.16.1	Prevention of lifting excessive loads	30
5.16.2	Excessive moment	30

5.17	Control devices	30
5.17.1	Controls for the use of disabled passengers	30
5.17.2	Hold-to-run principle	30
5.17.3	Logic	30
5.17.4	Unintentional operation	30
5.17.5	One control device for several movements	31
5.17.6	Several control devices for one movement	31
5.18	Control positions	31
5.18.1	Multiple control positions	31
5.18.2	Location of control positions	31
6	Compatibility of lift and vehicle	31
7	Verification of the safety requirements and/or measures	32
8	Information for use	34
8.1	General	34
8.2	Tail lift used as a link bridge	34
8.3	Inherent risks associated with improper use	35
8.4	Location and nature of information for use	35
8.4.1	Marking on the tail lift	35
8.4.2	Handbooks	35
8.4.3	Inspection record	38
Annex A (informative) Tail lift mechanisms and types		39
A.1	Mechanisms	39
A.1.1	Parallelogram	39
A.1.2	Column	41
A.1.3	Telescopic	41
A.2	Types	42
A.2.1	Rotary	42
A.2.2	Inset	42
A.2.3	Step	43
A.2.4	Internally mounted	43
Annex B (normative) Crushing and shearing		44
B.1	General	44
B.2	Platform lifting and lowering	44
B.2.1	Minimum safety distances	44
B.2.2	Hinged foot protector	44
B.2.3	Safety cut-out	46
B.2.4	Reversing mechanism	47
B.3	Platforms capable of lifting above vehicle floor level	48
B.4	Platform closure	48
Annex C (informative) Prevention of wheelchairs rolling unintentionally		49
Annex D (normative) Drive systems - Steel wire ropes and chains		51
D.1	Recommended specifications of steel wire ropes	51
D.2	Dimensions of pulley grooves	51
D.3	Flare angle	52
D.4	Fleet angles	53
D.5	Pitch circle	54
Annex E (informative) Marking		55
Annex F (normative) Verification by the installer		56
F.1	Compatibility between the lift and the vehicle	56

F.2	Static test	56
F.2.1	Deformation	56
F.2.2	Drift	56
F.3	Dynamic test	56
F.4	Test of operation and safety functions	56
F.5	Test to verify that the tail lift cannot lift excessive load	57
Annex G (informative) Overloads onto a platform at vehicle floor level		58
Annex ZA (informative) Relationship of this European Standard with EC Directives		59
Annex ZB (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC		60
Bibliography		61