

DIN EN 1756-1:2008-10 (E)

Tail lifts - Platform lifts for mounting on wheeled vehicles - Safety requirements - Part 1: Tail lifts for goods (includes Amendment A1:2008)

Contents		Page
Foreword		5
Introduction		7
1	Scope	7
2	Normative references	9
3	Terms and definitions	9
4	List of hazards	15
5	Safety requirements and/or protective measures	24
5.1	General requirements	24
5.2	Working area	24
5.3	Manual effort	25
5.4	Operating speeds	25
5.4.1	General	25
5.4.2	Vertical speed	25
5.4.3	Closing and opening speeds	25
5.4.4	Tilting speed	26
5.5	Load stability	26
5.5.1	Tilt angle	26
5.5.2	Stop devices	26
5.6	Limitations of travel	26
5.7	Layout of wires and pipes	26
5.8	Unauthorised operation	26
5.9	Isolation of energy sources	26
5.10	Tail lift stowage	27
5.10.1	Indication	27
5.10.2	Security	27
5.11	Crushing and shearing	27
5.12	Structure working coefficients	27
5.13	Platform	27
5.13.1	Surface	27
5.13.2	Bluntness of edges	28
5.13.3	Tail lift used as a link bridge	28
5.13.4	Visibility of platform	28
5.14	Drive systems	28
5.14.1	Unintentional movements	28
5.14.2	Mechanical suspension systems	29
5.14.3	Hydraulic systems	30
5.15	Safety devices	31
5.15.1	Safety mechanisms	31
5.15.2	Springs inside safety devices	31
5.16	Loading control	31
5.16.1	Prevention of lifting excessive loads	31
5.16.2	Excessive moment	31
5.17	Control devices	31
5.17.1	Hold-to run principle	31
5.17.2	Logic	31

5.17.3	Unintentional operation	31
5.17.4	One control device for several movements	32
5.17.5	Several control devices for one movement	32
5.18	Control positions	32
5.18.1	Multiple control positions	32
5.18.2	Location of control positions	32
6	Optional equipment	32
7	Verification of the safety requirements and/or measures	32
8	Information for use	36
8.1	General	36
8.2	Tail lift used as a link bridge	36
8.3	Inherent risks associated with improper use	36
8.4	Location and nature of information for use	36
8.4.1	Marking on the tail lift	36
8.4.2	Handbooks	37
8.4.3	Inspection record	39
Annex A (informative) Tail lift mechanisms and types		41
A.1	Mechanisms	41
A.1.1	Parallelogram	41
A.1.2	Column	42
A.1.3	Telescopic	43
A.2	Types	43
A.2.1	Conventional : (full and part width)	43
A.2.2	Folding platform	44
A.2.3	Retractable	45
A.2.4	Rotary	46
A.2.5	Door mounted	47
A.2.6	Inset	48
A.2.7	Internally mounted	48
Annex B (normative) Crushing and shearing		49
B.1	General	49
B.2	Platform lifting and lowering	49
B.2.1	Two-hand control	49
B.2.2	Two-foot control	50
B.2.3	Toe guard	50
B.2.4	Hinged foot protector	53
B.2.5	Safety cut-out	54
B.2.6	Automatic toe protector	55
B.3	Platforms capable of lifting above vehicle floor level	57
B.4	Platform closure	57
B.4.1	Two-hand control	57
B.4.2	Safety cut-out	57
Annex C (informative) Structure and drive system		58
Annex D (normative) Drive systems - Steel wire ropes and chains		60
D.1	Recommended specifications of steel wire ropes	60
D.2	Dimensions of pulley grooves	60
D.3	Flare angle	60
D.4	Fleet angles	61
D.5	Pitch circle	62
Annex E (normative) Examples of controls logic		63

Annex F (informative) Marking	65
Annex G (informative) Unintentional operation	66
Annex H (normative) Verification by the installer	67
H.1 Compatibility between the lift and the vehicle	67
H.2 Static test	67
H.2.1 Deformation	67
H.2.2 Drift	67
H.3 Dynamic test	67
H.4 Test of operation and safety function	67
H.5 Test to verify that the tail lift cannot lift excessive load	68
Annex I (informative) Overloads onto a platform at vehicle floor level	69
Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 98/37/EC	70
Annex ZB (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC	71
Bibliography	72