

DIN EN 81-22:2014-12 (E)

Safety rules for the construction and installation of lifts - Lifts for the transport of persons and goods - Part 22: Electric lifts with inclined path

Contents		Page
Foreword		5
0	Introduction	6
0.1	General	6
0.2	Considerations	6
0.3	Principles	6
0.4	Assumptions	7
1	Scope	10
2	Normative references	11
3	Terms and definitions, symbols and abbreviated terms	13
3.1	Terms and definitions	13
3.2	Symbols and abbreviated terms	19
4	List of significant hazards	19
4.1	General	19
5	Safety requirements and/or protective measures	22
5.1	General provisions	22
5.2	Lift well	22
5.3	Machine, working areas and pulley spaces	32
5.4	Landing doors	43
5.5	Car, vehicle, counterweight, balancing weight	50
5.6	Suspension, compensation, overspeed protection and protection against unintended vehicle movement	61
5.7	Running tracks, guide rails, counter-guide rails and safety gear operating element - Buffers - Final limit switches	72
5.8	Clearances between vehicle and wall facing the vehicle entrance, and between car, counterweight or balancing weight	78
5.9	Lift machine	79
5.10	Electric installations and appliances	85
5.11	Protection against electric faults; controls; priorities	91
6	Verification of the safety requirements and/or protective measures	107
6.1	Methods to be used	107
6.2	Specific data, test reports and certificates	114
7	Information for use	114
7.1	General	114
7.2	Signals and warning devices	114
7.3	Inspection and test	119
7.4	Accompanying documents (in particular, instruction handbook)	120
Annex A (normative)	List of the safety contacts	124
Annex B (normative)	Unlocking triangle	126
Annex C (informative)	Technical dossier	127

C.1	Introduction	127
C.2	General	127
C.3	Technical documents and plans	127
C.4	Electric schematic diagrams	128
C.5	Verification of conformity	128
Annex D (normative) Examinations and tests before putting into service		129
D.1	General	129
D.2	Examinations	129
D.3	Tests and verifications	129
Annex E (informative) Periodical examinations and tests, examinations and tests after an important modification or after an accident		133
E.1	Periodical examinations and tests	133
E.2	Examinations and tests after an important modification or after an accident	133
Annex F (normative) Safety components - Test procedures for verification of conformity		135
F.0	Introduction	135
F.1	Landing door locking devices	136
F.2	Safety gear	140
F.3	Overspeed governors	144
F.4	Buffers	147
F.5	Safety circuits containing electronic components and/or programmable electronic systems (PESSRAL)	153
F.6	Ascending vehicle overspeed protection means	156
F.7	Unintended vehicle movement protection means	159
Annex G (informative) Calculation of the supporting structure, the running tracks, the guide rails, the vehicle and the safety gear gripping element		164
G.1	General	164
G.2	Actions to take into account for calculation	164
G.3	Proof of guide rails	167
Annex H (normative) Electronic components- Failure exclusion		168
H.1	Scope	168
H.2	Failure exclusions - conditions	168
Annex I (informative) Safety circuits		172
I.1	Design guide-line for safety circuits	172
I.2	Description of possible measures	172
Annex J (normative) Pendulum shock tests		179
J.1	General	179
J.2	Test rig	179
J.3	Panels	179
J.4	Test procedure	179
J.5	Interpretation of the results	180
J.6	Test report	180
J.7	Exceptions from the tests	180
Annex K (informative) Traction evaluation		185
K.1	General provisions	185
K.2	Traction calculation	185
K.3	Practical example	190

Annex L (normative) Evaluation of safety factor for suspension ropes	193
L.1 General	193
L.2 Equivalent number Nequiv of pulleys	193
L.3 Static safety factor	194
L.4 Examples	195
Annex M (informative) Machinery spaces - Access (5.3.3)	197
Annex N (informative) Building interfaces	198
N.1 General provisions	198
N.2 Support of guide rails	198
N.3 Ventilation of car, lift well and machinery spaces	198
Annex O (informative) Environment: aspects to be considered for a risk analysis	201
Annex P (informative) Determination of anti-slip properties for floor surfaces	203
P.1 General	203
P.2 Testing and assessing anti-slip properties	203
Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 95/16/EC	205
Bibliography	206