MALAYSIAN STANDARD

MS EN 81-2:2007

SAFETY RULES FOR THE CONSTRUCTION AND INSTALLATION OF LIFTS - PART 2: HYDRAULIC LIFTS

Preview Only

ICS: 91.140.90

Descriptors: lifts, goods passengers lifts, definitions, building codes, installation, safety requirements, lifts cars, landing doors, lift wells, compensating ropes, shock absorbers, machine rooms, electrical installations, safety, stopping and locking devices, name plates,

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FOREWORD

The adoption of the EN Standard as a Malaysian Standard was recommended by the Working Group on Lifts and Escalators under the authority of the Mechanical Engineering Industry Standards Committee.

This Malaysian Standard is identical with EN 81-2:1998 including its Amendment prA2:2003, *Safety rules for the construction and installation of lifts – Part 2: Hydraulic lifts*, published by the European Committee for Standardization (CEN) with the exceptions as listed below.

MS EN 81 consists of the following parts, under the general title *Safety rules for the construction and installation of lifts*:

Part 1: *Electric lifts*

Part 2: *Hydraulic lifts*

Part 3: *Electric and hydraulic service lifts*

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MALAYSIAN STANDARD EXCEPTIONS

a) in the source text, "this European Standard" should read "this Malaysian Standard";

b) the comma which is used as a decimal sign (if any), to read as a point;

c) references to European/International Standards should be replaced by equivalent Malaysian Standards as follows:

Referenced European/International Standards	Corresponding Malaysian Standards
EN 294:1992, *Safety of machinery - Safety distances to prevent danger zones being reached by the upper limbs*	MS ISO 13852, *Safety of machinery – Safety distances to prevent danger zones being reached by upper limbs*
EN 1050, *Safety of machinery - Principles for risk assessment*	MS ISO 14121, *Safety of machinery – Principles of risk assessment*
EN 60947-4-1, *Low-voltage switchgear and controlgear - Part 4: Contactors and motor-starters - Section 1: Electromechanical contactors and motor-starters*	MS IEC 60947-4-1, *Low-voltage switchgear and controlgear – Part 4: Contactors and motor-starters – Section 1: Electromechanical contactors and motor-starters*

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Referenced European/International Standards	Corresponding Malaysian Standards
EN 60950, *Safety of information technology equipment, including electrical business equipment*	MS IEC 60950-1, *Information technology equipment – Safety – Part 1: General requirements*
HD 384.4.41 S2, *Electrical installations of buildings - Part 4: Protection for safety - Chapter 41: Protection against electric shock*	MS IEC 60364-4-41, Electrical installations of buildings – Part 4: Protection for safety – Chapter 41: Protection against electric shock
HD 384.5.54 S1, *Electrical installations of buildings - Part 5: Selection and erection of electrical equipment - Chapter 54: Earthing arrangements and protective conductors*	MS IEC 60364-5-54, *Electrical installations of buildings – Part 5: Selection and erection of electrical equipment – Chapter 54: Earthing arrangements and protective conductors*
HD 384.6.61 S1, *Electrical installations of buildings - Part 6: Verification - Chapter 61: Initial verification*	MS IEC 60364-6-61, *Electrical installations of buildings – Part 6: Verification – Chapter 61: Initial verification*

d) for the purposes of this Malaysian Standard, the following modifications apply:

Sub clause	EN 81-2:1998 with prA2:2003	MS EN 81-2:2007
3	-	**Authorised person** (definition) Personnel permitted by the lift approved firm (registered with the local authority) to carry out specific task on the lift equipment.
	-	**Balancing weight bottom runby** (definition) The distance between the balancing weight buffer striker plate and the striking surface of the balancing weight buffer when the car floor is level with the top terminal landing.
	-	**Car bottom runby** (definition) The distance between the car buffer striker plate and the striking surface of the car buffer when the car floor is level with the bottom terminal landing.
	-	**Goods lift** (definition) Lift exclusively used to carry goods and installed in a public prohibited area, for which an attendant and the persons required to load and unload the goods are permitted to ride.

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FOREWORD *(continued)*

Sub clause	EN 81-2:1998 with prA2:2003	MS EN 81-2:2007
3	**Safety gear** (definition) Mechanical device for stopping, and maintaining stationary on the guide rails, the lift car or balancing weight in case of overspeeding in the downward direction or breaking of the suspension. -	**Safety gear** (definition) Mechanical device for stopping, and maintaining stationary on the guide rails, the lift car or balancing weight in case of **predetermined** overspeeding in the downward direction or breaking of the suspension. **Travel** (definition) The distance of the path between the lift terminal landings within which the lift car serves.
5.2.2.1.1	Emergency doors shall have a minimum height of 1.80 m and a minimum width of 0.35 m.	Emergency doors shall have a minimum height of 1.80 m and a minimum width of **0.60 m**.
5.2.2.2.1	-	Emergency doors shall be capable of being self-closing.
5.3	The structure of the well shall conform to National Building Regulations and be able to support at least the loads which may be applied by the machine……. unloading the car, etc.	The structure of the well shall conform to the **Laws of Malaysia (Uniform Building By-Laws)** and be able to support at least the loads which may be applied by the machine…….. unloading the car, etc.
5.7.2.2	If there is an access door to the pit, other than the landing door, it shall comply with the requirements of 5.2.2. If there is no other access a permanent means shall be provided inside the well, easily accessible from the landing door, to permit competent persons to descend safely to the floor of the pit.	If there is an access door to the pit, other than the **bottom terminal** landing door, it shall comply with the requirements of 5.2.2. If there is no other access, a permanent means such as **suitable footholds and handholds** shall be provided inside the well, easily accessible from the **bottom terminal** landing door, to permit **authorised** persons to descend safely to the floor of the pit.
5.7.2.3	b) the free vertical distance between the bottom of the pit and the lowest parts of the car, shall be at least 0.50 m.	b) the free vertical distance between the bottom of the pit and the lowest parts of the car, shall be at least **0.60 m**.
5.7.2.6	-	Minimum car or balancing weight bottom runby shall be 50 mm.
5.8	The well shall be exclusively used for the lift. It shall not contain cables or devices, etc., other than for the lift.	The well shall be exclusively used for the lift. It shall not contain cables, **piping** or devices, etc., other than for the lift.

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FOREWORD *(continued)*

Sub clause	EN 81-2:1998 with prA2:2003	MS EN 81-2:2007
6.4.9	The working areas and machinery spaces shall be provided with permanently installed electric lighting on the basis of at least 200 lux at floor level.	The working areas and machinery spaces shall be provided with permanently installed electric lighting with an intensity of at least **300 lux at 1 m from the floor or working level.**
6.5.5	The inside of the machinery cabinet shall be provided with permanently installed electric lighting with an intensity of at least 200 lux at floor level.	The inside of the machinery cabinet shall be provided with permanently installed electric lighting with an intensity of at least **300 lux at 1 m from the floor or working level.**
8.3.2.3	-	Every lift car shall comprise a platform, a roof, a car enclosure, gate or door and a supporting frame. a) Every car platform shall be of framed construction and in the case of any passenger lift shall be designed to support the contract load on the basis of such load being evenly distributed. The factor of safety shall not be less than 5 for steel and 8 for timber, except that in the case of steel platform stringers, the factor of safety may not be less than 4. b) Every car frame shall be made of steel and of sufficient strength to withstand the operation of safety gear when fully loaded without permanent deformation. The factor of safety of any car frame members and their connections shall not be less than 5. c) The deflection of any car frame crosshead and any member carrying the platform shall not exceed 1/750 of its respective span under static conditions with the contract load evenly distributed over such platform (see also 8.3.2). Dynamic condition should also be considered.
8.12.2	If there is an emergency trap door in the car roof to permit the rescue and evacuation of passengers, it shall measure at least 0.35 m x 0.50 m.	**There shall be** an emergency trap door in the car roof to permit the rescue and evacuation of passengers, and it shall measure at least 0.35 m x 0.50 m.
8.12.4	If emergency trap doors or doors are installed, they shall conform to 8.3.2 and 8.3.3, also to the following.	**The** emergency trap doors or doors installed shall conform to 8.3.2 and 8.3.3, also to the following.

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FOREWORD *(continued)*

Sub clause	EN 81-2:1998 with prA2:2003	MS EN 81-2:2007
8.16.4	-	The car shall be provided with adequate forced ventilation (of not less than 10 air change per hour with car doors closed) during the periods such lift is available for use, and where ventilating fans or blowers are used they shall be securely fastened in place and located above the car ceiling or outside the car enclosure. Total free area of any ventilation air inlet shall be at least 50 % greater than the total free area of the air outlet.
8.16.5	-	There shall be an emergency supply which is capable of feeding at least the forced ventilation for 2 h in case of interruption of the normal supply. This forced ventilation shall come in automatically upon failure of the normal power supply.
8.17.4	There shall be an automatically rechargeable emergency supply, which is capable of feeding at least a 1 W lamp for 1 h in case of an interruption of the normal lighting supply.	There shall be an automatically rechargeable emergency supply, which is capable of feeding at least a 1 W lamp for **2 h** in case of an interruption of the normal lighting supply.
9.8.5.1	When a safety gear has tripped its release shall require the intervention of a competent person.	When a safety gear has tripped its release shall require the intervention of an **authorised** person.
15.4.1	A notice bearing the following minimum inscription: **"Lift Machine – Danger** **Access forbidden to unauthorized persons"**	A notice bearing the following minimum inscription: **"BILIK JENTERA LIF** **BAHAYA** **DILARANG MASUK TANPA KEBENARAN"** and (if necessary) **"Lift Machine Room** **Danger** **No entry without authorisation"** NOTE. The height of the words "BILIK JENTERA LIF" and "BAHAYA" should not be less than 50 mm. The height of all other lettering should not be less than 20 mm.

FOREWORD *(continued)*

Sub clause	EN 81-2:1998 with prA2:2003	MS EN 81-2:2007
15.5.1	In the case of trap-doors, a permanently visible notice shall indicate to those using the trap-door: **"Danger of falling - Reclose the trap-door"**	In the case of trap-doors, a permanently visible notice shall indicate to those using the trap-door: **"BAHAYA** **ANDA BOLEH TERJATUH** **TUTUP SEMULA PINTU"** and (if necessary) **"Danger of falling** **Reclose the trap-door"** NOTE. The height of the word "BAHAYA" should not be less than 50 mm. The height of all other lettering should not be less than 20 mm.
	Outside the well, near the inspection doors, there shall be a notice stating: **"Lift well – Danger** **Access forbidden to unauthorized persons"**	Outside the well, near any inspection or access doors (except landing doors), there shall be a notice stating: **"LUBUNG LIF** **BAHAYA, BOLEH TERJATUH** **DILARANG MASUK TANPA KEBENARAN"** and (if necessary) **"Lift well** **Danger of falling** **No entry without authorisation"** NOTE. The height of the words "LUBUNG LIF" and "BAHAYA, BOLEH TERJATUH" should not be less than 50 mm. The height of all other lettering should not be less than 20 mm.

Goods lift (see definition 3) other than goods passenger lifts, with regard to the relationship between rated load and maximum available car area for classes of loading and design requirements is not covered under this Malaysian Standard.

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FOREWORD *(continued)*

e) It is essential that the appropriate specifications/codes of practice are consulted on all aspects of the construction and installation of hydraulic lifts. In particular, attention is drawn to the following:

   i) Factories and Machinery Act 1967 (Act 139);

   ii) Occupational Safety and Health Act 1994 (Act 514);

   iii) Street, Drainage and Building Act 1974 (Act 133) - Uniform Building By-Laws 1984;

   iv) Fire Services Act 1988 (Act 341); and

   v) Electricity Supply Act 1990 (Act 447) - Electricity Regulations 1994.

Compliance with a Malaysian Standard does not of itself confer immunity from legal obligations.

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