Saudi Standards, Metrology and Quality Organization
SASO

Technical Regulation for Electrical Lifts Used in Buildings and Facilities

This regulation was approved in the meeting of SASO board of directors No. (161) held on 18/07/2017.A.D

Published in the Official Gazette on
09/01/1439 A.H. (29/09/2017 A.D.)

Version (1) - Amendment (1)

The amendment was published in the Official Gazette on 29/03/1440 A.H. (07/ 12/ 2018 A.D.)

Note:
Only the Arabic version of this Regulation is authentic in law and is applicable where there are differences with this translation

Contents

Preamble 3
Article (1): Terms and Definitions 4
Article (2): Scope 6
Article (3): Objectives 7
Article (4) Essential Health and Safety Requirements 7
Article (5) Obligations of Supplier 10
Article (6) Obligations of the Inspection Body 10
Article (7) Obligations of the Maintenance Company 10
Article (8) Obligations of the Owner 11
Article (9) Labeling 11
Article (10) Guidance Manual 11
Article (11) Firefighting and Rescue Lift 11
Article (12) Conformity Assessment Procedures 12
Article (13): Periodic Maintenance 13
Article (14): Periodic Inspection 13
Article (15): Responsibilities of Competent Authorities 13
Article (16): Responsibilities of Regulatory authorities 13
Article (17): Responsibilities of Market Surveillance Authorities 14
Article (18): Violations and Penalties 14
Article (19): General Provisions 16
Article (20): Transitional Provisions 17
Article (21): Publication 17
Annex (1) 18
Annex (2) 21
Annex (3) 24
Annex (4) 40
Annex (5) 44
Annex (6) 45
Annex (7) 46
Annex (8) 47

Preamble

In line with the accession of the Kingdom of Saudi Arabia (KSA) to the World Trade Organization (WTO), as per the Decree No. 244 of the Council of Ministers, dated 21/09/1426 A.H., concerning the approval of documentation on the Kingdom's accession to the WTO, and the requirements by which the KSA shall adapt its relevant systems with the principles of WTO agreements, particularly, the Technical Barriers to Trade (TBT), which stipulates that no unnecessary technical requirements shall impede the flow of commodities among the member states, and that technical requirements and methods of conformity assessment shall not discriminate between products on the basis of origin, through the issuance of Technical Regulations that include the essential requirements and standardized business procedures.

In accordance with Article 3 (Clause-1), Statue of Saudi Standards, Metrology and Quality Organization, issued in accordance with the Council of Ministers Decree No. 216, dated 17/06/1431 A.H. (31/05/2010 A.D.), stipulating that: **"SASO shall issue Saudi standards, quality systems and guidelines and conformity assessment, compatible with international standards and guidelines, that meet the requirements of the World Trade Organization (WTO) Agreement, in addition to their compliance with Islamic Sharia and serving the interests of Saudi Arabia";**

In accordance with Article 4 (Clause-2), Statute of Saudi Standards, Metrology and Quality Organization, issued in accordance with the Council of Ministers Decree No. 216, dated 17/06/1431 A.H. (31/05/2010 A.D.), stipulating that: **"SASO shall issue regulations for conformity assessment procedures of commodities, products, and services according to approved standards";**

In accordance with Article 4 (Clause-14), Statute of Saudi Standards, Metrology and Quality Organization, issued in accordance with the Council of Ministers Decree No. 216, dated 17/06/1431 A.H. (31/05/2010 A.D.), stipulating that: **"SASO shall review the laws and control regulations related to SASO's work fields, and develop them, and propose amendments thereto in line with quality and safety requirements, and refer them to competent bodies in order to review and issue them, in accordance with applicable procedures";**

In accordance with Article 6 (Clause-1), Statue of Saudi Standards, Metrology and Quality Organization, issued in accordance with the Council of Ministers Decree No. 216, dated 17/06/1431 A.H. (31/05/2010 A.D.), stipulating that: **"Subject to Article 4 of this Statute, SASO is considered the reference of matters related to standards, conformity assessment procedures, granting the quality mark, metrology and calibration. All public and private sectors shall be adhered to the Saudi standards in all purchases".**

Whereas the standards of the products included in a regulation shall be a basis for the conformity of such products with the essential safety requirements included in the specified regulation.

Therefore, SASO has developed this Technical Regulation.

Note: This preamble and all the annexes of this regulation shall form an integral part thereof.

Article (1): Terms and Definitions

1/1 When applying the articles of this regulation, terms and expressions hereunder shall have the meanings indicated in front thereof, unless the context otherwise requires:

SASO: Saudi Standards, Metrology and Quality Organization

The Board: SASO's Board of Directors.

KSA: The Kingdom of Saudi Arabia.

Technical Regulation: A document approved by the Board that provides the specifications of products, associated processes and production methods, including the applicable administrative provisions; with which compliance is mandatory. It may include or pay attention to terms, definitions, packaging, and requirements of markings or labelling products, services, processes or production methods.

Standard: A document approved by the Board that provides, for regular and recurring use, non-mandatory rules, instructions, and specifications of products or processes and production methods. It may include or pay attention to terms, definitions, packaging, and requirements of markings or labelling products, services, processes or production methods.

Market Surveillance: Activities and measures carried out by the market surveillance authorities to verify that products meet the requirements stipulated in the relevant technical regulations, and to ensure that they do not pose a risk to health, safety, environment, or any other aspect related to the protection of the public interest.

Market Surveillance Authorities: Government body/ bodies responsible for carrying out market surveillance operations.

Regulatory Authorities: Government body/ bodies with regulatory tasks according to their specializations, that are responsible for the implementation and enforcement of technical regulations, whether in customs, markets, or manufactories.

Competent Authority: The competent authority concerned with the application of the provisions of this technical regulation (municipalities and Civil Defense departments).

Hazard(s): A potential source of harm.

Risk (s): A potential risk causing damage; associated with the severity of damage.

Supplier:

- A product manufacturer, if he is a resident in KSA; any person identified as the manufacturer of the product, through linking the product to his name, or to a relevant commercial description; or any person who renews a product including product assembly and installation.
- An agent, if the manufacturer is outside KSA.
- An importer of the lift or its components; or who assembles and installs them.
- Any person in the supply chain, whose activities impact the product specifications.

Conformity Assessment Procedures: A document approved by the Board, which describes the procedures used directly, or indirectly, for the conformity assessment.

Notified (Approved) Bodies: Conformity Assessment Bodies "Third Party", approved by SASO in accordance with the regulation of Conformity Assessment Bodies Acceptance.

Inspection Body: A conformity assessment body certified according to ISO 17020, and accepted by SASO as per the Regulation of Conformity Assessment Bodies Acceptance, to carry out inspection procedures on lifts, including the procedures of metrology, testing and calibration prior to the public use or during the execution of periodic tests, and to issue an inspection certificate as per the requirements set out herein.

Certificate of Conformity: A certificate issued by SASO or approved notified body, which ensures the conformity of a product, or any batch thereof, with the requirements of relevant standards.

Supplier Declaration of Conformity: A declaration by the supplier by which it declares that a product conforms with the requirements herein and applicable legislations, without the mandatory intervention of a third party neither in the design stage, nor in the production stage of the manufacturing process. A declaration may depend on testing the product in accordance with the relevant legislation.

Saudi Quality Mark: A mark granted by SASO, which declares that the supplier has established an effective management system, which ensures that supplied products are produced in accordance with the applicable regulations, granting procedures, and relevant Saudi standards.

Placing on Market: Launching a product for the first time in the Saudi market for which the manufacturer/supplier is responsible.

Making Available on the Market: Any supply of the product for distribution, consumption or use in KSA, in the course of a commercial activity, in return for payment or free of charge.

Withdrawal: Any procedure that aims to prevent placing a product in the market or in a supply chain.

Recall: Any procedure that aims to recall products made available for the end-user.

Product: The electrical lift or any components thereof.

Maintenance Company: Any individual company or establishment licensed and qualified to carry out the lifts maintenance activity as per the requirements issued by the competent authority in this regard.

Owner: The building or the facility owner in which the lift is located, or its representative.

Conformity Assessment: The lift meeting the requirements set out in the technical regulations or standards, including the procedures of sampling, testing, inspection, assessment, conformity assurance, registration, acknowledgment and any other related procedures.

Electrical Elevator (Lift): A device serving specific vertical levels, including a car moving between vertical means or transferring means with a vertical inclination of less than 15° angle, that is used to carry people and/or goods in the multi-storey buildings and facilities.

Essential Requirements: Special requirements of products, which may affect the safety, health, and the environment. that must be adhered to.

Note: Annex (2) includes technical terms and definitions of lift components.

Article (2): Scope

This regulation shall apply to the following:

Electrical lifts prepared for public use in buildings and facilities, and based on safety components of lifts set out in Annex (5) herein.

The following shall be excluded from the application of this regulation:

1) Cable lifts (Teleferiques) and the extremely steep railways for public and private transport.
2) Lifts dedicated to military or security purposes.
3) Lifts of mines.
4) Lifting machines prepared for lifting persons and/or goods in construction sites.
5) Lifts with controlled speed which equals or less than 0.15 meter/ second.
6) Electric escalators and belts (walkers).

Article (3): Objectives

This regulation aims to lay out the essential requirements of lifts included in the scope of this regulation. It also intends to identify conformity assessment procedures for lift parts and components with which the supplier shall comply prior to placing them into the market, and the requirements of installation, operation, inspection procedures and maintenance, to ensure the conformity of this product, and protect environment and consumer health and safety.

Article (4) Essential Health and Safety Requirements

4/1 General Requirements

4/1/1 Compliance with the main requirements relating to health and safety shall apply when the lift or any of the safety components are at risk, in the ordinary use, as identified by the lift manufacturer and the components manufacturer or their installer.

4/1/2 Essential requirements of health and safety set out herein shall be obligatory; therefore, the lift or the related safety components shall be designed and constructed in such a way that achieves the maximum - objectives relating to health and safety.

4/1/3 Manufacturer of the safety components and the lift installer shall analyze the risks related to their products. Such risks shall be taken into consideration upon product design and construction

4/1/4 Lifts or safety components may not be offered in the market, nor put in service, as per the requirements herein, unless they do not pose a risk to the health and safety of persons or safety of properties, if applicable, when installed, operated and maintained properly, and used for the intended purpose.

4/2 Essential Technical Requirements of Lifts and Safety Components

Lifts and safety components shall be designed and manufactured so that they meet the main technical requirements of lifts and safety components for each part of the components set out in Annex (3). The standard set forth in Annex (1) shall be considered to meet non-stated requirements.

4/2/1 Risks on Persons Outside the Car

1 The lift shall be designed and established in such a way that ensures non-access to the space (track) of the car, except for the purposes of maintenance or during emergencies, provided that the ordinary use of the car shall be stopped before the entry of any person to this space.
2 The lift shall be designed and established in such a way that prevents the risk of being crushed when the car is in one of its maximum positions (the end of track).
3 This shall be achieved by finding a free space or refuge behind the extreme positions of the car (end of track).
4 It may be possible, in exceptional cases, to find other proper means to avoid such risks, particularly in existing buildings.
5 The entry and exit thresholds (the level entrance) of the car shall be equipped with thresholds gates of mechanical strength (resistance) sufficient in all intended usage conditions.

The interlock device shall prevent the car movement in the following ordinary cases:

- Upon the beginning of car movement, whether activated intentionally or not, unless the storey doors (thresholds) are closed and locked.
- Upon opening the level door (threshold) whenever the car is still moving and when the car is outside the storey of the specified floor.

In any case, all landing movements shall be allowed during the process of adjusting the cars with the thresholds (i.e., floor opening) with the opening of the doors in specific areas, with the car's speed adjusted to reach a level.

4/2/2 Risks on Persons inside the car

1 Lift cars shall be fully surrounded by walls of full-length, installed floors, included ceilings- except for the ventilations and shall be with full-length doors. Such doors shall be designed and installed in such a way that prevents car movement, except for the landing movements referred to in Item (4/2/1 – 3) above, unless the doors are closed. The car shall stop upon doors opening.
2 Car doors shall remain closed and interlocked when the lift stops between two levels, when there is a risk of falling between the car and the lift well (shaft) or when there is no well.
3 In case of a power outage or a defect occurred in the components, the lift shall have tools that prevent the free fall of the car or its uncontrolled movement.
4 Such tool, which prevents the free fall of the car, shall be independent of the car's hangers.
5 Such tool shall be able to stop the car at its rated load with the maximum expected speed from the installer. Any stoppage of such tool shall not lead

to any slowdown harmful to the occupants regardless of the circumstances of the load.

6 Bumpers shall be installed between the lower part of the shaft and the car floor.

7 In such case, the free space (free area of resort behind the maximum positions) referred to in item (4/2/1- 2) with the fully pressed bumpers shall be measured.

8 This requirement shall not apply to lifts of which the car cannot enter the free space referred to in item (4/2/1- 2) due to the design of the drive system.

9 Lifts shall be designed and established in such a way that makes them impossible to move if the tool set out in item (4/2/2- 2) is not in the operation mode.

4/2/3 Other Risks

1 When the thresholds doors (level) and/or the car doors are equipped with a motor, they shall be equipped with a device that prevents the risk of crushing at the movement of such doors.

2 When the thresholds doors (level) contribute to the building protection against fire, including doors that contain glass pieces, they shall be fire resistant in a proper way, in terms of their safety and specifications in relation to the separation (fire containment) and heat transfer (thermal radiation).

3 The counterweight shall be installed to avoid any risks of collision with the car or falling on it.

4 Lifts shall be equipped with means enabling persons trapped inside the car to be released/evacuated.

5 Cars shall be equipped with two-way communication means, allowing permanent communication with the rescue service.

6 Lifts shall be designed and constructed so that, if the planned temperature in the lift engine exceeds the maximum set by the installer, movement can be proceeded, and new commands can be refused.

7 Cars shall be designed and constructed in such a way that ensures sufficient ventilation for passengers, even in the case of a prolonged stoppage.

8 The car shall be properly lighted on use, or whenever the door is opened. Lighting shall be available in emergencies.

9 The means of communication referred to in item (4/2/3- 5) and emergency lighting referred to in item (4/2/3- 8) shall be designed and constructed in such a way that they can be operated even without the ordinary power

supplies. The period of its operation shall be long enough to carry out rescue operations.

10 The control panels in lifts, which can be used in case of fire, shall be designed and constructed in such a way that prevents lifts from stopping at specific levels (floors) allowing rescue teams to work according to the priority.

Article (5) Obligations of Supplier

The supplier shall:

5/1 Fulfil and install lifts and safety components, set out in Annex (5) as per the main and technical requirements set out herein and in relevant standards, set out in Annex (1):

5/2 Inform the competent authority of lifts, installed and prepared for public use, in order to implement the inspection process, set out herein.

5/3 Provide all available and required abilities and resources for the inspection bodies to facilitate the inspection and testing procedures on lifts.

5/4 Provide all technical documents, upon request, including certificates, testing reports and inspections reports proving that lifts and safety components are in conformity with the requirements herein.

5/5 Any other requirements identified by the competent authorities.

Article (6) Obligations of the Inspection Body

The inspection body shall:

6/1 Be approved by SASO according to the Regulation of Conformity Assessment Bodies Acceptance, stipulating that such body shall be approved by a recognized certifying authority, according to the standard stated in Annex (1).

6/2 Submit an inspection report on the validity of the lift to the competent authority prior to putting it in service. Such report shall include results of all tests carried out by the inspection body on the lift after installation.

6/3 Conduct all periodic inspections for the lift and submit a report of the inspection results to the competent authority.

6/4 Keep a copy of the electrical diagrams of the lift and the operation manual:

6/5 Fully cooperate with the facility owner, the competent authority, and the supplier to carry out all inspections required for lifts.

6/6 Meet any other requirements defined by the competent authorities.

Article (7) Obligations of the Maintenance Company

The maintenance company shall:

7/1 Keep a specific record for each lift the company maintained, such record shall include the following:

A) Report of maintenance works carried out, spare parts, and all parts installed or replaced.
B) Complaints by the lift's users.

7/2 Inform the competent authority and the owner of the lift, that would endanger passengers if used, and the appropriate corrective actions taken to ensure safety of users.

7/3 Inform the competent authority of the lifts whereon essential maintenance operations (modifications) were done, to re-inspect them.

7/4 Meet any other requirements that the competent authorities define.

Article (8) Obligations of the Owner

The owner shall:

8/1 Meet the requirements of electrical lift wells' dimensions and the spaces necessary to install lifts, as per the requirements of the Saudi Building Code and the standards contained in Annex (1) herein.

8/2 The lift shall be subject to a maintenance contract as long as it is in service, to ensure its safe operation.

8/3 Register the lift with the competent authority as per the form (D) of the standard stated in Annex (1).

8/4 Meet any other requirements defined by the competent authorities.

Article (9) Labeling

The markings and labels of the lifts shall contain the following:

9/1 Name and commercial register (CR) of the supplier.

9/2 Fulfillment of the requirements of the Saudi standards contained in Annex (1) concerning explanatory notes.

9/3 Labels, notifications and operation guidance shall be written in Arabic or in both Arabic and English. They shall also be legible and easy to understand (if marks or symbols are needed). Marks shall be made of permanent non- removable materials and placed in a location that is visible to all.

9/4 Images and phrases used inside lifts shall not violate the public law, morals, and the Islamic values prevailing in KSA.

Article (10) Guidance Manual

The lift and safety components thereof shall be accompanied with a (paper or electronic) guidance manual written in Arabic or in both Arabic and English.

Article (11) Firefighting and Rescue Lift

11/1 All the high buildings and installations, the height of which is more than (23) meters above the ground level, shall be equipped, in their main entrance, with at

least one lift for firefighters and rescue men, or as defined in the regulations of the General Directorate of Civil Defense in KSA and the Saudi Building Code.

11/2 The supplier and the owner shall adhere to the instructions and decisions issued by the General Directorate of Civil Defense in this regard.

11/3 In case of fire or emergency, the firefighting and rescue lifts shall meet the relevant standards' requirements contained in Annex (1) herein.

Article (12) Conformity Assessment Procedures

12/1 The supplier, responsible for the placement of lifts and their components, including safety components in the market, shall obtain a Certificate of Conformity as per the requirements of this regulation and the relevant Saudi standards. Such certificate shall be issued by an approved body as per the conformity assessment form contained in Annex (4). The components of lifts, including their safety components that bear the Saudi Quality Mark shall be deemed to be fulfilling the requirements of this clause.

12/2 Lifts installed in the buildings shall obtain an inspection certificate issued by an approved body. The inspection shall include all lift's components, including related safety components.

12/3 Lifts shall meet the safety requirements contained herein, the standards mentioned in Annex (1), and the essential requirements of health and safety set out in Annex (3) attached to this regulation..

12/4 The product shall be accompanied by a technical file, which includes the following:

A) Supplier (manufacturer/importer) Declaration of Conformity as per the model attached in Annex (6).

B) Risk Assessment Document.

C) Certificate of Origin.

12/5 The competent authority shall:

A) Ensure that the lift area's dimensions meet the requirements of the standards contained in Annex (1) herein.

B) Ensure that the lift's technical file, all test documents, and testing reports meet the technical requirements of this regulation and the standards set out in Annex (1).

12/6 After installation of the lift and prior to putting it in service, the inspection body shall carry out inspections and required tests as per the two standards contained in Annex (1), attached hereto, and to ensure that the lift meets the requirements of the two standards above.

12/7 The inspection body shall affix the inspection certificate, according to the form defined in Annex (8), in the ground floor outside the lift car, after being

registered with the competent authority, during the initial operation and after license renewals during the periodic inspection (check).

12/8 No service lift shall be used until registered with the competent authority, based on an inspection report including an inspection certificate issued by an approved inspection authority. The registration shall be annually renewed after assessing the periodic inspection results. A copy of the valid inspection certificate, shown in Annex (8), shall be placed outside the lift car and shall mention the validity period. The lift shall be inspected whenever essential modifications are made thereon, as defined in the standards referred to in Annex (1).

Article (13): Periodic Maintenance

13/1 Lifts shall meet the requirements referred to in the standards contained in Annex (1), attached hereto.

13/2 If any component is found damaged during the periodic maintenance, it shall be replaced or repaired, and shall be followed by the procedures set forth in the approved standard contained in Annex (1), attached hereto.

Article (14): Periodic Inspection

14/1 Periodic inspections and tests of the lift in service shall meet all the requirements contained in the standards contained in Annex (1), attached hereto, concerning safety device, buffers and other devices not operating during the normal operation of the lift. Periodic inspections and tests shall not be more stringent than those required prior to putting the lift in service.

14/2 Repeated periodic inspections and tests shall not damage the electrical lift or the relevant safety components.

14/3 The inspection authority shall carry out inspections and tests at least once every year according to the standard contained in Annex (1).

Article (15): Responsibilities of Competent Authorities

The competent authorities, as part of their area of competence and powers, shall:

15/1 Register lifts and their owners according to the form (D) of the standard referred to in Annex (1).

15/2 Grant the maintenance company a license to carry out the maintenance of lifts as per specific technical and administrative conditions.

Article (16): Responsibilities of Regulatory authorities (Customs Ports - Manufactories)

The regulatory authorities, as part of their area of competence and powers, shall:

16/1 Verify that lifts meet the specified conformity assessment procedures and the technical documents attached with the consignments at the customs ports and factories.

16/2 Randomly sample lifts and refer such samples to competent laboratories to ascertain the extent of the conformity to the requirements contained herein.

16/3 Have the right to charge suppliers with costs of tests and associated fees.

16/4 In case of a non-conformity of the product, withdraw the concerned products from warehouses, and take the necessary legal actions.

16/5 The competent authorities shall take the necessary actions to make sure the person in charge of lift operation (the building owner) in the building or facility and the person in charge of the installation of the lift are sharing information about corrective processes and safe operation of the lift.

Article (17): Responsibilities of Market Surveillance Authorities

The market surveillance authorities, as part of their area of competence and powers, shall:

17/1 Apply market surveillance procedures to products, including parts and components to be assembled, available in the markets, as well as products stored in the warehouses of traders and manufacturers in order to verify the safety of products and the extent of fulfillment of the requirements stipulated herein and in relevant standards.

17/2 Sample the product, its parts or components, from the market or warehouses of suppliers (manufacturers and importers), in order to conduct necessary tests and to verify the conformity of such products with the requirements set out herein.

17/3 In case of non-conformity of – displayed or stored – products with the requirements herein, take all administrative actions including withdrawal and recall of such products. Procedures and penalties – stipulated in Article (18) – shall be applied after taking the necessary actions.

17/4 Whenever the Regulatory Authorities and Market Surveillance Authorities find that the lift, its parts, or safety components, may endanger persons or properties, the competent authorities shall take all necessary actions to withdraw the same from the market or prevent its display therein.

Article (18): Violations and Penalties

18/1 It is prohibited to manufacture, import, launch, or even advertise lifts, or its components that are non-conforming with the requirements of the articles stipulated herein.

18/2 Failure to meet the requirements herein shall be a sufficient reason for Market Surveillance Authorities and Regulatory Authorities to consider the product as

non-conforming, which may pose a risk to the health and safety of consumers and to the environment, including, but not limited to:

A) Non-fixing or improper fixing of conformity labels, inspection certificate, Saudi Quality Mark, or its equivalent.

B) Failure to issue or improper issuance of the Certificate of Conformity, Inspection Certificate, or the Supplier Declaration of Conformity, or contain incomplete or incorrect information.

C) Lack, unavailability, or incompleteness of the technical documentation upon request.

D) Lack, unavailability, or incompleteness of product data/labels, safety guidelines, or usage instructions.

18/3 In case of a violation of the provisions hereof, Market Surveillance Authorities shall take all necessary actions to eliminate such violations, and their effects from the market. To this end, Market Surveillance Authorities may:

A) Mandate the violating party – that is responsible for placing and offering the product – to withdraw the product from the warehouses or markets in order to remedy such violations, if possible. The product may be exported or destroyed (according to the nature of the product) within the period specified by the Market Surveillance Authorities.

B) Withdraw, restrain or destroy the products, or take any other necessary action to recall such products from markets. In addition, as the case may be, Market surveillance Authorities may announce the withdrawal of the product from the markets, and the violating party shall bear all associated expenses.

C) Deal with the violating products covered by this regulation in accordance with laws and regulations applicable in the Regulatory Authorities and Market Surveillance Authorities.

18/4 When a violation of lifts or any components is found, SASO shall take the necessary actions to cancel the relevant conformity certificate, declare the violations and take the measures necessary with the approved body that issued the certificate.

18/5 The competent authorities shall take the actions necessary to get lifts (permanently or temporarily) out of service in any of the following cases:

A) Failure to register with the competent authority.

B) Expiration of the inspection certificate.

C) Lack of maintenance at specified times.

D) Failure to provide the technical file of lifts or any component thereof, especially the safety components specified in Annex (5).

E) Any violation of the main technical requirements specified in Annex (3) is found.

18/6 Without prejudice to any more severe penalty stipulated by the regulations in force, any person who contravenes the provisions of this regulation shall be subject to the penalties provided in the applicable Anti-Commercial Fraud Law, any other Law replacing it or consumer protection legislations.

Article (19): General Provisions

19/1 Supplier shall bear full legal responsibility for the implementation of the requirements herein, and shall be subject to the penalties stipulated in the Anti-Commercial Fraud laws and/or any other related laws, in case any violation of the articles thereof is proven.

19/2 This regulation shall not impede the supplier to comply with all other laws/ regulations applicable in KSA concerning lift's trading, transporting, and storing, as well as laws/ regulations concerning environment, security and safety. In addition, adhering to the requirements of this regulation shall not preclude compliance with the requirements of the Saudi Building Code.

19/3 Suppliers of lifts, subject to the provisions of this regulation, shall provide inspectors (controllers) of the Regulatory Authorities, Market Surveillance Authorities, and the competent authorities with all necessary information, when required, to carry out their duties.

19/4 Where new originated cases that cannot be treated under the provisions herein or where a dispute arises as a result of the application of such provisions, such matter shall be referred to the competent committee in SASO, in order to issue a proper resolution regarding the case or dispute, while taking the public interest into consideration.

19/5 The supplier may submit a new request after elimination of the reasons of rejection for the conformity assessment procedures request, and after the necessary corrections have been made. The supplier shall be responsible for any additional expenses determined by SASO.

19/6 SASO shall examine the complaints received regarding the products having a Certificate of Conformity or a Quality Mark, if any, verify the validity of such complaints, and take the necessary legal actions in case of any violations.

19/7 SASO shall have the right to annul the Certificate of Conformity or the Quality Mark license, if any, if the supplier violates the provisions herein, and shall take the legal actions to ensure the preservation of the rights of SASO.

19/8 If any modifications were made to the product during the validity period of the Certificate of Conformity, inspection certificate, or the Quality Mark license, if any, (except for morphological modifications), the certificate, license, or the Supplier Declaration of Conformity for this product shall be annulled, and a new request shall be submitted.

19/9 SASO shall, exclusively, have the right to construe the articles herein. All beneficiaries of the application of this Technical Regulation shall adhere to the interpretations issued by SASO.

Article (20): Transitional Provisions

20/1 Suppliers of lifts, including safety components, shall adjust their status in accordance with the provisions herein, within a period not exceeding (six months) as of the date of publication.

20/2 Subject to the provisions of item (1) of this Article, products, not complying with the provisions specified herein may be traded for a maximum of one year as of the date of publication.

20/3 With regard to the installed lifts (which are in service) including the lift components, the supplier shall adjust its status in accordance with the provisions herein, within a period not exceeding two years as of the date of publication.

20/4 This Technical Regulation, once adopted, shall supersede all the preceding regulations related to the scope of this regulation.

Article (21): Publication

This regulation shall be published in the Official Gazette.

Annex (1)

List of Lifts Standards (HS Code 84281000)

No.	Standard No.	Standard Title in Arabic	Standard Title in English
1	SASO-466	المصاعد الكهربائية للأفراد أو البضائع- الجزء الأول: المتطلبات العامة	Elevators for individuals or goods – First Part: General requirements
2	SASO-467	المصاعد الكهربائية للأفراد أو البضائع- الجزء الثاني: متطلبات الأمان	Elevators for individuals or goods – Second Part: Safety Requirements
3	SASO-468	المصاعد الكهربائية للأفراد أو البضائع- الجزء الثالث: متطلبات التركيب	Elevators for individuals or goods – Third Part: Installation Requirements
4	SASO-584	المصاعد الكهربائية للأفراد أو البضائع-الجزء الثامن: متطلبات الصيانة الدورية	Elevators for individuals or goods – Eighth Part: Periodic maintenance requirements
5	SASO-978	المصاعد الكهربائية والهيدروليكية للأفراد أو البضائع- الجزء الحادي عشر: إجراءات التركيب والفحص الدوري واعتماد جهات الفحص	Elevators for individuals or goods – Eleventh Part: Procedures of installation, periodical checks and approval of Inspection Bodies
6	SASO-EN-81-20	قواعد السلامة لصناعة وتركيب المصاعد - مصاعد نقل الأشخاص والبضائع - الجزء ٢٠: مصاعد الركاب والبضائع	Safety rules for the construction and installation of Lifts – lifts for the transport of persons and goods – Part 20: Passenger and goods passenger Lifts
7	SASO-EN-81-50	قواعد السلامة لصناعة وتركيب المصاعد – الاختبارات والفحوصات - الجزء ٥٠: قواعد التصميم والحسابات، والاختبارات والفحوصات لمكونات المصعد	Safety rules for the construction and installation of lifts - Examinations and tests - Part 50: Design rules, calculations, examinations and tests of lift components
8	SASO-ISO-4190-1	تركيب المصعد - الجزء الأول: الصنف الأول والثاني والثالث والسادس للمصاعد	Installation of Lift – First Part: Elevators type I, II, III & IV
9	SASO-ISO-4190-2	تركيب المصعد - الجزء الثاني: الصنف الرابع للمصاعد	Installation of Lifts – Second Part: Elevators type – IV
10	SASO-481	المصاعد الكهربائية للأفراد أو البضائع -	Elevators for individuals or goods –

		الجزء الرابع: طرق اختبار تدابير الأمان في التركيبات الكهربائية للمصاعد.	Fourth Part: Methods of test for safety measures in electrical installations for Lifts
11	SASO-482	المصاعد الكهربائية للأفراد أو البضائع - الجزء الخامس: تدابير الأمان في التركيبات الكهربائية للمصاعد	Elevators for individuals or goods – Fifth Part: Safety measures in electrical installations for Lifts
12	SASO-490	المصاعد الكهربائية للأفراد أو البضائع - الجزء السادس: فحوص واختبارات قبول المصاعد بعد تركيبها في المباني	Elevators for individuals or goods – Sixth Part: Tests and acceptance tests after installation of elevators in the Buildings
13	SASO-491	المصاعد الكهربائية للأفراد أو البضائع - الجزء السابع: الفحوص والاختبارات الدورية	Elevators for individuals or goods – Seventh Part: Periodic inspections and tests
14	SASO-610	المصاعد الكهربائية للأفراد أو البضائع - الجزء التاسع: طرق اختبار المحركات التأثيرية عديدة الأطوار وأحادية السرعة لتشغيل المصاعد	Elevators for individuals or goods – Ninth Part: Methods of test engines with many influential roles and to run single speed elevators
15	SASO-GSO-318	المصاعد الكهربائية للأفراد أو البضائع- الجزء العاشر: المحركات التأثيرية عديدة الأطوار وأحادية السرعة لتشغيل المصاعد	Electric Lifts For Passengers Or Goods Part 10: Single-Speed Polyphase Induction Motors For Driving lifts
16	SASO-608	طرق اختبار المحركات الكهربائية المبردة بالهواء	Methods of test for air cooled Electrical motors
17	SASO-609	المحركات الكهربائية المبردة بالهواء	Air cooled Electrical motors
18	SASO GSO EN 81- 73	قواعد السلامة لإنشاء وتركيب المصاعد - استعمالات خاصة لمصاعد الركاب ومصاعد الركاب والبضائع - عمل المصاعد أثناء الحريق	Safety rules for construction and installation of Elevators – particular application for passenger and goods elevators – behavior of Elevator in the event of fire
19	SASO GSO EN 81- 72	قواعد السلامة لإنشاء وتركيب المصاعد - استعمالات خاصة	Safety rules for construction and installation of Elevators – particular

		لمصاعد الركاب ومصاعد الركاب والبضائع - مصاعد رجال مكافحة الحريق	application for passenger and goods elevators-Fire fighter Elevator
20	SASO GSO EN 81- 71	قواعد السلامة لإنشاء وتركيب المصاعد - استعمالات خاصة لمصاعد الركاب ومصاعد الركاب والبضائع – مصاعد مقاومة للتلف	Safety rules for construction and installation of Elevators – particular application for passenger and goods elevators-Vandal resistance elevators
21	SASO EN 81-70	قواعد السلامة لإنشاء وتركيب المصاعد- إمكانية الوصول الي المصاعد للأشخاص بما في ذلك ذوي الاحتياجات الخاصة	Safety rules for construction and installation of elevators - Particular applications for passenger and goods elevators- Part 70 Accessibility to lift for persons including persons with disability

Annex (2)

Lifts' Technical Terms and Definitions

Available car area: Area of the car measured at the height of 1 meter from the floor, without considering handles available for persons or loads use during the lift operation.

Buffer: A flexible tool to be installed at the travel stroke end (in lift well pit) and contains means for mitigating the hit such as liquids, springs or other similar ways.

Safety component: One of the safety components set out in Annex (3) attached to the Regulation.

Lift car: Part of the lift allocated to carry individuals and/or goods.

Machine room: A room in which the lift machine and accessories are installed/assembled.

Machine room lift: Lifts that need separate room for installing the traction machine and its controller.

Machine room less lift: Lifts that do not need separate room for installing the traction machine.

Geared traction machine: A traction machine through which the power (movement) is transferred from the motor to drive sheave through the speed reduction gears.

Lift machine: A unit that includes a motor which operates and stops the lift car.

Gearless traction machine: A type of the lift machines through which the traction means above the traction drive sheave passes, and constitutes a complementary part of the motor structure

- It is named gearless because it does not contain any speed reduction gears.

Well (Shaft): A space into which the car and the counterweight (if any) are restricted by the pit ground, walls and well ceiling.

Pit: A part located below the level of the lowest landing served by the lift.

Free space: A free space or resort behind the maximum positions of the car movement track.

Landing: Part of the floor structure or the building on which the loading or unloading is carried out.

Counterweight: A weight or group of weights working on balancing the car weight with part of its rated load.

Rated Load: A load of which the lift car is designed to carry during the ordinary operation.

Rated Speed: A car speed during the ordinary operation, on which the lift is designed.

Over – speed governor: A tool works automatically on operating safety devices that stop the lift car when the lift exceeds the identified speed.

Leveling Accuracy: A vertical distance between the lift car sill and the floor threshold upon loading or unloading the car.

Leveling adjustment: A process of adjusting the car floor alignment with the floor threshold upon the car stoppage.

Toe guard: An apron with smooth vertical surface extending from the floor threshold or the car entrance downwards.

Electro-mechanical interlock: A tool containing an electric connector of the door and mechanical interlock in one unit, where the operation of each of them depends on the other.

Safety gear: A mechanical device works on stopping the car or the counterweight and its stability on the movement rails in case of increasing the lift speed during the landing or in case the suspending means collapse.

Guide shoes: Attachments installed in the car or the counterweight for adjusting their movement with the guides (rails).

Guides (Rails): Rods on which the car or the counterweight moves.

Pulley: A pulley with grooves on its external surface for winding the suspending ropes on them.

Normal terminals stopping device: A device(s) used to stop the car automatically on or near the required level door threshold without being affected by the operation of the car operation device.

Floor – stopping device: A device(s) used to stop the car automatically on the required level door threshold.

Progressive safety gear: A device that works on reducing the speed by the effect of the brake on the guides, which includes special precautions to reduce the forces affecting the suspended part to the allowable value.

Instantaneous safety gear: A safety gear attracting the car on the guides, mostly, immediately.

Final limit switch: An emergency switch working automatically on stopping the lift car in case of exceeding the highest threshold at a certain distance.

Car frame (Sling): Metal structure, holding the car or the counterweight, connected with the suspending means. The car structure and walls may be one part.

Traction drive lift: A lift whose suspending ropes are driven by friction in the grooves of the machine Pulley.

Positive drive lift (includes drum drive): A lift suspended by chains or lifting ropes and is driven by means other than the friction.

Safety: Prevention of accidents that may lead to any effect on the human safety and health.

Head room: A confined space between the upper floor level and the ceiling of the well.

Putting the lift in the service: This shall be made immediately after the installer makes the lift ready and available for use.

Installer of a lift: A person in its natural or legal capacity who shall be responsible for designing, manufacturing and installing the lift and offering it in the market, and shall install the conformity mark on it. Such person shall also meet the conformity declaration of the lift.

Safety components manufacturer: A person in its natural or legal capacity who shall be responsible for designing and manufacturing of the safety components and shall install the conformity mark on it. Such person shall also meet the conformity declaration of it.

Minimum breaking force: The product of multiplying the cross section area of the suspending means measured by square millimeter, multiplied by the tensile strength in Newton per square millimeter and a coefficient suitable for the structure of the medium of the suspending means.

Safety rope: A cord (rope) connected between the speed control device and the safety gear on the car or the counterweight. It works on operating the safety gear in case of the suspension means cutting.

Unintentional car movement: Out-of-control car movement away from the floor area when the doors are open except the movement during the loading and unloading.

Annex (3)

Essential Technical Requirements for Lifts and Safety Components

1. Lift Car

1) The available area of the car floor shall be identified as per the schedules set out in the standard specification (SASO EN 81-20), which identifies the relationship between the number of passengers or the planned load of kilograms and the available car area by square meter, to prevent the overload in the car over the planned load for the lift.

For lifts designed for transferring individuals, which dimensions are appropriate for this purpose, the car shall be designed and installed in such a way that its constructional specifications, including dimensions, shall not hinder the entry and/or use of disabled persons, with developing appropriate control means allocated to facilitate the use, as per (SASO EN 81-70).

2) The car shall be provided with audio or visual warning system, which works when the load exceeds the specified limit, provided that the lift shall not work unless the load is reduced to the specified limit.

3) Each car may be equipped with one or many doors.

4) The car shall be equipped with electrical lighting which intensity shall not be less than (100) lux at a height of (1 m) of the level of the car floor and the control panel, away from walls with (100) mm, and the number of the lights shall not be less than two luminaries connected in parallel.

5) Materials used in manufacturing walls, floor and ceiling of the car shall not cause any damages to individuals as a result of the nature and size of gases resulting therefrom in case of fire.

6) Emergency exits in the ceiling and side emergency exits' doors of cars shall meet the requirements set out in the standard specification (SASO EN 81-20).

7) Internal net height of the car room shall not be less than 2 meters and the net height of the car entrance for ordinary use for individuals shall not be less than 2 meters.

8) Operation and control buttons and switches in the car as well as the switch off button and warning button shall be at a height of 40 cm at least from the car floor.

9) The car door shall be perforated.

10) An emergency lighting source shall be existent inside the car to be charged automatically which is able to operate one light at least of (5) lux per hour, in case of the electricity power cut off from the car lighting. It shall light automatically once the electrical current is cut off from the car.

11) The car shall contain an emergency warning device in a recognizable and accessible place and shall be at the reach of passengers inside the car for external help.

12) Lifts shall be equipped with means preventing any unintentional movement that place the lift away from the intended landing floor with a distance of more than the allowable limits, when the car door and the level door are open.

2. Lift Well

1) Lift well shall be constructed of a solid floor, ceiling and walls. The construction materials shall be non-combustible and shall not emit harmful gases or smoke in case of fire.

2) Opening thresholds shall be covered in full by doors of a height not less than (2) meters and the net width of the threshold doors shall not exceed (0.05) meter on the car entry from both sides, provided that the upper border of the threshold door (floor) shall not be a hindrance of the entry to the car.

3) Lift well shall be designed and constructed in such a way allowing it to carry at least all loads located thereon, resulting from the machine and the Guide Rails during the operation of safety gear, in the case of irregular distribution of load inside the car, or if the car or the counterweight collides with the buffers.

4) Lift well shall be equipped with proper ventilation. Such ventilation shall not be used in any other places other than those of the lift.

5) Lift well shall be exclusively used for the lift, and the well shall not include any devices or cables other than those of the lift. However, the lift well may be used for placement of heating devices of the lift well other than those operated by hot water or steam, provided that the control devices of the that heating shall be outside the lift well.

6) Lift well shall be equipped with permanent lighting with at least (50) lux light intensity for working areas, and (20) lux for areas not designated for work; to use it during maintenance and repair operations. Such lighting shall include one light installed on an area below and above the well and lighting units in the center of the well with at least (50) lux light intensity for working area, and (20) lux for areas not designated for work. The light shall be switched on/off through a key installed in the lift well.

7) Lift well shall be protected from heat or smoke transfer vertically to other floors.

8) Lift well shall not be a part of the ventilation system in the building, and a sufficient ventilation system shall be provided to discharge smoke in case of fire in the lift well.

9) Lifts number in one well shall not be more than four lifts. If the number of lifts is more than four, a new well shall be provided while specifying one lift to be the

firefighters lift and shall be isolated from the remaining lifts with firefighting materials.

10) If the lift well contains a number of lifts, a border between the movable parts (the car, counterweight) for the various lifts shall be existent, in a solidity tolerant for (300) newton force on (5) cm^2 area. Such border shall extend at least (2.5) meters from the lowest floor threshold of the lift. A border shall be existing whenever the distance, between the (border) banister and the moving parts of orthogonal lifts, is less than (50) cm, in a width larger than that of the moving parts by (15) cm on each side along the lifts' well height; to avoid collision of the moving parts of the car and the counterweight during maintenance operations of the adjacent lifts.

11) When using fire-fighting water sprayer devices inside the lift's well or the machines room, such sprayers shall not be activated unless the lift is stopped in the level, and the power supply of the lift and lightening system is automatically turned off through the fire warning system.

3. Suspension and Support Means

1) Suspension means and/or support means and their accessories and any parts thereof (including the cable and rope terminals) shall be chosen and designed to ensure sufficient level of comprehensive safety and reduces the risk of the car falling, taking into consideration the use conditions, used materials and the manufacturing conditions.

2) Cars and counterweights shall be suspended with ropes or steel chains, provided that the number of ropes or chains shall not be less than two. Such ropes and chains shall not contain connections except in necessary cases to fix or form their circuits.

3) The safety factor of the suspending ropes shall not be less than:

- (12) for lifts working by the method of traction with three ropes or more.
- (16) for lifts working by the method of traction with two ropes.
- (12) for lifts with drum drive.
- (10) for chain-using lifts.

4) Threaded wells and pulleys used for displacement, suspending and balance shall be protected. Special devices shall be provided for such wheels and pulleys, for:

- Preventing physical damages.
- Preventing ropes/ chains from leaving grooves of pulleys or gears in case of laxity.
- Preventing the entry of odd objects among ropes/chains and grooves of pulleys/ gears.

4. Loading Control (including the speed increase)

1) Lifts shall be designed, constructed and installed in such a way that prevents ordinary operation when the load exceeds rated load.

2) A lift shall be equipped with over speed governor. This requirement shall not apply to lifts, which its machines design does not allow high speeds.

3) High-speed lifts shall be equipped with over speed governor.

4) Friction pulleys operated lifts shall be designed to ensure the stability of the traction ropes on the pulley.

5) Percentage between the over speed governor pulley diameter shall not be less than (30) and the rope diameter shall not be less than (6) mm.

6) If the over speed governor rope is cut or sagged, this shall lead to the stopping of the car movement using an electric safety gear.

7) Speed governor shall be installed in a place accessible in all cases. If it is installed in the lift well, it shall be accessible from outside the well.

5. Machines

1) Each lift, prepared for transporting persons, shall be equipped with one machine, at least. This requirement shall not apply to lifts in which the counterweight is replaced with another car.

2) Lift installer shall ensure that lift machines and associated devices are only accessible for the purpose of maintenance and emergencies.

3) Belts may be used in connecting motors with operating parts of electromechanical brakes, provided that belts shall not be less than two.

4) Each lift machine shall be equipped with an automatic braking system in any of the following cases:

- If the main electrical current is cut off from the lift.
- If the current is cut off from the control circuits board.

5) The braking system shall be electromechanical (of friction type), and further types of braking systems may be added, such as the electrical braking.

6) Electromechanical brakes shall be able – automatically - to stop the lift machine, when the car moves downwards by the rated speed and loaded with the rated load plus (25%) of the rated load.

7) Any machine shall be equipped with a manual device for operation during emergency, working by any means to release the brake in emergencies, which ensures re-operation immediately once the hand pressure is removed.

8) A lift shall be equipped with automatically operated braking system immediately when the main electricity network is cut off from the lift.

9) Necessary precautions required to protect machines from rotating devices that may cause dangers shall be taken, especially:

- Any keys or bolts in the machine pivot;
- Tapes, chains and belts;
- Gears and threaded wheels;
- Machine salient axes;
- Fly ball type speed regulator.

This shall not include traction sheaves hand winding wheels, brake drums, and similar smooth round parts. Such parts shall be, partially at least, coated in yellow.

6. Engines (Motors)

1) Air-cooled engines shall be tested according to the standard specification (SASO 608 - Methods of air- cooled engines testing).
2) Single speed multi-phase induction motors shall be in conformity with the standard specification (SASO GSO 318 – individual and goods lifts – part 10: single speed three-phase induction motors for lifts driving).
3) When a lift engine may work as a generator, the electrical device, operating the brakes, shall not allow providing electrical power from the lift engine.

7. Machines Room

1) When lift machines and accessories are installed in the machines room, the machines room shall be designed with walls, ceilings, floors and doors of strong and permanent materials and shall bear all forces and loads located on them.
2) Machines and pulleys shall be installed in their allocated places. Such places and other work areas shall be appropriate for the entry of authorized persons only (such as the maintenance, inspection and rescue personnel). All proper means shall be developed for protecting such places from the effect of bad weather and shall provide all requirements making it qualified for carrying out maintenance and inspections duties and emergencies properly.
3) Machines room shall only be used for the purposes of the lift, and shall not include any equipment, pipes or cables that have no relationship with lift installations.
4) Entrance of machines room and pulleys room shall be:
    - Well lighted with permanent lighting with intensity of (200) lux minimally in work areas and (50) lux in other areas.
    - Easy to use with full safety, in all circumstances, without the need to enter specific places.

5) Machines room door width shall not be less than 60 cm; its height shall not be less than 200 cm, and the direction of the door opening shall be towards the outside of the room.

6) Persons access to machines and pulleys room shall be through stairs if the distance between the machine room floor level and the engines/pulleys floor is more than 50 cm. If it is not possible to install stairs, a ladder shall be installed meeting the following requirements:

- It shall be well fixed and non-slip or non- reversible, or at least, be fixed with a chain or a rope to ensure non-removal.
- The ladder's width shall not be less than (35) cm, and the stairs' width shall not be less than (25) mm. The distance between the ladder and the wall, whereon the ladder is fixed, shall not be less than (15) cm, and the stairs shall bear a force of (1500) newton at least.
- The ladder's height shall not exceed 4m.
- If the staircase height is more than (3) meters, a falling protection means shall be installed.
- If the ladder's height is more than (1.5) m, the inclination angle from the horizontal line shall equal 65° to 75°, and shall be well fixed.
- Its use shall be only for the purpose of entering the machines room and shall be near it on a permanent basis. Necessary arrangements shall be taken to secure such purpose.
- One or more handles shall be available and accessible near the top edge of the ladder.
- When the ladder is not permanently fixed, interconnection points shall be available to connect it with the wall upon use.

7) Proper fire extinguishers shall be provided for electricity fires in the machines room and shall be in compliance with the requirements of the relevant Saudi standard specifications.

8) No pipes or ducts for gases or fluids shall be installed inside the machines room.

9) In addition to the above, the machines room may include:

- Machine for the service lift or escalators.
- Cooling or heating equipment for such rooms other than the ones operated by hot water or steam.
- Fire detection and fighting devices of high operation levels appropriate for electrical devices; they shall be stable for a time period and properly protected against breakage.

8. Machines Room inside Lift Well

1) If the lift machine is installed inside the lift well, machines supporters and works stations shall be designed in such a way allowing it to bear loads and forces prepared to be put on the same.

2) Dimensions of work places on the platform of the lift machine inside the lift well shall be sufficient and should allow the safe work on the equipment specifically. Moreover, a sufficient height of at least 2.1 meters shall be provided in work areas.

9. Control Devices

1) Function of controllers shall be explained in a clear way.
2) Lift controllers, prepared to be used by unaccompanied disabled persons (EN 81-70), shall be designed and developed according to their conditions.
3) Call circuits of the lift group may be common or correlated.
4) Electrical equipment shall be installed and connected so that:
   - There shall be no possibility for any doubt in the circuits that have no direct connection to the lift.
   - Power supplies may be replaced during the loading.
   - Lift movement shall depend on electrical safety devices, in an independent electrical circuit.
   - No default (malfunction) in the electrical installations shall lead to a dangerous situation.
   - Elements controlling electrical safety gears shall be designed in such a way that allows it to bear all mechanical pressures resulting from the continuous ordinary operation of the lift. If such elements due to their nature of installation and design are accessible by persons, they shall be installed in such a way that can not be disabled easily.
   - Controllers and protection devices shall have the following specifications:
     a) Protection against voltage loss;
     b) Protection against voltage decrease;
     c) Protection against losing any phase of the main feeding;
     d) Protection against the reversal of the main feeding of the lift machine;
     e) Protection against the cut off of the electrical connector continuity.

10. Cars Doors and Floor Doors

1) Doors shall be designed in such a way that does not cause any damages when collided with any part of the human body or when cloths are stuck or trapped to any other thing.
2) Clearance between door shutters or between the door and its vertical legs or thresholds shall not be more than (6) mm, and (10) mm in special cases; when the door is in the closed position.
3) Automatically operated doors shall open automatically when collided with any person, by a force not exceeding (150) newton, or any object during its entry to

the car while the door is closing through a protection device covering a protection area of (25) mm at least to (1600) mm from the threshold.

4) Necessary precautions shall be taken to prevent the movement of the lift or its continuous movement unless both the car door and the level doors (thresholds) are closed, except to the area of non-secure closure during the slow speed of the alignment with the threshold, as well as in the area extending to a height not exceeding (1.65) meters above the level of the floor thresholds; in order to load and unload lifts by individuals trained and authorized to do so.
5) Automatic doors of the lift shall be closed after specific period of time (to be identified according to the density of operation) if there are no requests to use the lift.
6) Doors shutter and frame shall be made by a method preventing twisting or deformation over time.
7) Level doors and attached interlocks shall be with mechanical strength, so that if a mechanical force of (300) newton affected the door on the closing position in a vertical direction at any point of the door surface, from inside or outside, where such force is divided on an area of (5 cm^2) of the door surface in a circle or square section, as well as a force of (1000) newton on areas of (100) cm^2 at any point of the door/its frame, the door and the interlock together shall:
    - Resist the occurrence of permanent deformation exceeds (1) mm;
    - Resist the occurrence of flexible deformation more than (15) mm;
    - Operate the door well after this test.
8) Each level door shall be equipped with a metal threshold, so that it can bear all forces and loads to be put thereon during the passage of loads and persons from and to the car.

Note: It is recommended that the floor before the door threshold has a little tilt outward the well to avoid the leak of washing and spraying water into the well. In case of using glass doors, the same shall conform to the standard (EN 81-20).

11. Opening Doors in Emergencies

1) It shall be possible to open the level door from the outside by a special key identical to the interlocks opening triangle set out in Annex (7).
2) Such key shall only be given to authorized persons attached with written instructions indicating necessary precautions to be taken to avoid accidents that may arise from the process of interlocks opening followed a comprehensive closing process.
3) After the process of opening the interlock in emergencies, the interlocking device shall not remain in the opening position while the level door is closed.

4) If the level door (thresholds) is pushed (opened) by the car door, a device shall be provided, whether a weight or springs, to ensure automatic closure of the door if such door is opened for any reason when the car is outside the opening area.
5) Level doors shall be securely closed automatically after opening them in emergencies.
6) In emergency and for allowing passengers to leave the car in case of the lift stopping, for any reason, near the thresholds (the level door), it shall be possible on the stoppage of the car and the cut off of the power supply from the door operator, if any, to:
    - Open the car door wholly or partially by hand from the thresholds (level door).
    - Open the car door wholly or partially with the door of the associated level – if they are associated together - by hand from inside the car.

12. Suspension Ropes

1) The safety factor of suspension ropes shall be calculated as per the standard (SASO EN 81-20) and the safety factor of the suspension rope shall not be less than:
    - (12) for lifts working by traction with three (3) ropes or more.
    - (16) for lifts working by traction with two (2) ropes.
    - (12) for lifts with drum drive.
    - (10) for chain-using lifts.

    The safety factor shall be calculated as being the percentage between the strength of the minimum breaking force of the rope (or chains) measured by Newton and the maximum tensile of force that rope measured by Newton, when the car is stopping at the level of the first floor and loaded with the rated load

2) Ropes shall meet the following requirements:

Nominal diameter shall not be less than 8 ml.

Tensile strength force of ropes shall be:

Other specifications (structure, prolongation, shape (crack), flexibility, tests,) shall be, at least, in conformity with the relevant European specifications. (EN 12385-5)

The percentage between the rope diameter and the traction pulley diameter shall not be less than 40 regardless of the number of rope whorls.

3) The safety factor of suspension chains shall not be less than 10, and not less than two chains.

4) The rope end shall be fixed in the car, the counterweight or the suspending points of the dead parts of twisted ropes by metal ties (ends), resin filled sockets, self- tightening wedge type sockets, heart shaped thimbles with no less than three proper twists or hand spliced eyes, ferrule secured eyes or in any other way equal in safety level.
5) Chain ends shall be fixed in the car, the counterweight or the suspending points of the dead parts of twisted chain, using proper ends. The connection between the chains and the chains ends shall be able to resist at least 80% of the minimum breaking force.
6) It shall be possible to lift the empty car when the counterweight is focused on the buffer and the lift machine is moving upward.

13. Cables

1) Lift cables shall meet the requirements set out in related standards.
2) To provide the mechanical power, the area of the cross section of electrical safety gears connectors of the doors shall not be less than 0.75 mm^2, to provide mechanical power.
3) If the ducting or the cable itself contains connectors with various voltage electrical circuits, all connectors or cables shall be isolated as per the isolation identified for the maximum voltage.

14. High Voltage Testing

All electrical devices- except engines, electronic equipment and devices- shall bear the testing voltage, when an electrical voltage is focused between electrified parts and the metal frame of the equipment for one minute without any flashing or isolation collapse.

15. Insulation Resistance

The insulation resistance shall be measured between each electrified connector and the earth. The lower values of the insulation resistance shall be taken from Schedule (16) of the standard SASO EN 81-20.

16. Car and Counterweight Safety Gear

1) The car shall be equipped with a safety gear able to work downward and to stop the car with its full rated load on tripping speed of the speed regulator, even if the suspending devices are stopped through arresting the guide rods and stopping the car in that place.
2) If there are available places under the car, or the counterweight, the base of the lift pit of the default load shall be designed to bear at least 5000 Newton / m^2. The counterweight shall be equipped with a safety gear.

Note: It is preferred that the location of the lift wells is not above the places available to persons to access.

3) For lifts which speed exceeds the rated speed 3.5 m/s, the anti-backward device shall be existent and shall commence with stopping the lift machine with electrical safety gear.
4) Safety gears of each car and counterweight shall be operated individually by the speed regulator for each of them. When the rated speed does not exceed 1 m/s, the safety gear of the counterweight may be operated by disabling the suspending device of the counterweight or using the safety rope.
5) The release (work commencement) of the safety gear of each car and the counterweight shall be possible only on lifting the car or the counterweight.
6) After releasing (opening) the safety gear, a technically qualified person shall interfere.

17. Counterweight

If the counterweight contains filling weights, necessary measures shall be taken to prevent its displacement. For this reason, the following shall be used:

1) Metal frame within which such fillings (weights) shall be installed.
2) If such fillings are made of metal and the rated speed of the lift is not more than 1 m/s, connection rods shall be used within which such fillings shall be installed.

18. Ordinary Stopping Switches at the End of Track and Final Stopping Switches

1) Final stopping switches shall be adjusted at the nearest possible place to the track ends (lower and upper levels). It shall work before the car or the counterweight touches the buffers. The final stopping switches shall remain in opening positions when the car or the counterweight are stable on the buffers fully pressured.
2) Final stopping switches shall work as follows:
   a) For positive driven lifts, such switches shall be opened directly through the positive mechanical insulation of the circuits that feed the engine and the brakes.
   b) For single or double speed traction driven lifts, such switches shall work either:
      - By opening the electrical circuit and cutting off the electrical current as per Paragraph (a) above, or
      - The electrical safety gear shall open the electrical circuit that directly feeds connectors coils.
   c) For variant voltage lifts or continuously varied speed lifts, such switches shall work accordingly, provided that the machine shall stop quickly, i.e. in the shortest time in line with the system.
3) After the work of the final stopping switches, the lift shall not be re-operated automatically. The lift shall be re-operated only by a qualified person.

19. Guide Rails

1) Guide rails, connections and accessories thereof shall be with resistance to bear the weight and the forces, in order to ensure the safe operation of the lift.
   Safe operation aspects of the guide rails are:
   - The car and counterweight directors shall be ensured.
   - Deviations shall be limited to the cases that:
     a) Not lead to unintended opening of the door interlock.
     b) Not affect the operation of the safety gears.
     c) Not lead to the collision of the moving parts to the other parts.
2) The car and the counterweight shall have guide rails made of steel, not less than two guides for each.
3) The method of installing the guide rails into the brackets and in the building shall allow the compensation of the building stability effects or the shrinkage of the concrete, either automatically or by simple adjustment, provided that the attachment design shall be in such a way in which its turning do not result in releasing the guide.

20. Preventing Accidents During Maintenance

1) If there are two lifts inside the well, a barrier not less than (2.5) meters high and not exceeding (30) cm height above the basement floor, shall be placed there between.

2) Limit switch shall be installed in the pit in order to stop the lift and keep it stopped in case of emergency, and the same shall be accessible form inside/outside the lift. Whenever the pit's width exceeds (1.6) m, two limit switches shall be installed. The lowest part of the well shall consist of a hole and smooth flat bottom, except the ones allocated for buffers, guides bases and water drainage equipment. The pit shall be free of any material that may lead to slide, and designed to resist water leakage.

3) The lighting for lifts, pit, machinery room or pulley shall be separated from the feeding of the lift machine, whether through another circuit or from the same circuit, but shall be connected before the main circuit breaker(s).

4) The feeding required for the plugs- located at the roof of the car and in machinery and pulley room, as well as the well as the pit, shall be separated from the feeding of the lift machine; either through other circuits or from the same circuit, but shall be connected before the main breaker as indicated in Paragraph 3 of Clause 20 hereinabove.

Such plugs shall be of a triangular type 2P+PE, 250V.

Using the above mentioned plugs shall not mean the use of an electric cable with a cross-section size of the connector equivalent to the current passing through it.

The cross-sectional area of the conductor may be smaller, provided that the same shall be protected from excess currents.

5) The pit shall be equipped with:

- An electric switch accessible when opening the level door to stop the lift;
- Electric plug;
- Electric switch for lightening the well accessible when opining the door leading to the pit.

6) When the car is stable on the fully compressed buffers, the following conditions shall be met at the same time:

A) A space shall be provided in the pit sufficient to place anthropomorphic rectangular to meet the requirements stipulated in Schedule (3) regarding spaces above the cabin, and Schedule (4) regarding spaces under the cabin inside the well, in accordance with standard EN 81-20.

B) The vertical distance between the floor of the pit and the lowest part of the car shall not be less that (0.5) m. This distance may be reduced to less than (0.10) m within a horizontal distance of (0.15) m between:

1) A protective barrier or part of the vertically sliding doors of the car.

2) The lowest part of the car and guide rails.

C) The free vertical distance between the highest fixed part of the pit, for example the tensile device of the compensation ropes located at the top part thereof and lowest part of the car, except the ones detailed in B (1) and (2) above which shall be (0.30) m at least.

21. Electrical Safety Requirements

1) Defects hereunder, which can occur to the electrical equipment of the lift, shall not cause hazards to the operation of the lift:

A) Loss of voltage.

B) Low voltage.

C) Loss of conductor continuity.

D) Insulation defect in metal tools or grounding.

E) Short circuit or separation of circuit. Change in value or operation of an electrical component such as the resistor, capacitor, transistor, lamp, etc.).

F) Lack or weak attraction of the armature ofthe contactor or relay.

G) Non-separation of the armature of the contactor or relay.

H) Failure to open the contact.

I) Failure to close the contact.

J) Phase reflection.

2) All openings in electrical wiring shall be protected to prevent hazards and electric shocks.

22. Emergency Operation

1) If the manual effort required to move the car up when fully loaded is more than (400) Newton, the lift machine shall be equipped with a manual device for emergency operation that allows moving the car to the landing level by a smooth wheel.

2) If such devices are not fixed (removable), they shall be placed in an easily accessible location in the machinery room and shall be properly marked when there is any risk of confusion between such device and another.

3) It shall be possible to verify easily whether the car has reached the lock-off area. This can be done by marking the suspension ropes or the speed regulator rope.

4) In case of emergency, the power switch shall, allow the control of the car movement through continuous pressure on buttons protected against accidental operation, where the direction of movement shall be clarified.

23. Alarm

1) Each lift shall be equipped with an emergency alarm that can be operated from the inside of the car, which shall be heard from the outside of the well, or with a communication means for emergency use in order to contact the rescue service.

2) The alarm shall be marked with (Lift Alarm) phrase. In case of multiple lifts, it shall be possible to identify the room from which the call is made.

3) This device shall allow a permanent voice communication to rescue services in two directions. After the use of the communication device, there shall be no need for a stuck person to do any additional action.

4) Lifts, with more than (30) meters path, shall be equipped with an intercom system or any similar system, to be installed between the car and the machinery room, and fed from the emergency source.

24. Over Speed Governor

1) The over speed governor for the car safety gear shall operate at a speed equal to at least 115% of the rated speed of the lift and less than:

A) 0.8 m/s for the over speed governors of immediate type, excluding those of the captive roller type.

B) 1 m/s for the over speed governors of immediate type, including those of the captive roller type.

C) 1.5 m/s for the over speed governors of immediate type with impact buffers and rated safety devices for the rated speeds of not more than 1.0 m/s.

D) 0.25 m/s + 1.25 m/s for the over speed governors with rated speeds of more than 1.0 m/s.

2) For lifts with rated speed of more than 1 m /s, it is recommended that the speed required to release (operate) the over speed governors is as close as possible to the values stated in Paragraph 24-1.

3) For lifts for heavy rated loads with low rated speeds, the over speed governors shall be designed especially for such purpose. It is recommended that the speed required to release (operate) the over speed governors is as close as possible to the values stated in Paragraph 24-1.

4) The speed required to release the over speed governors of the safety device for the counterweight shall be greater than the speed required to release the speed governors of the safety device for the car, so as not to exceed such speed as indicated in Paragraph 24-1 but shall not be increased of more than 10%.

5) The over speed governors shall indicate the corresponding direction of the safety device.

6) The over speed governor shall be operated by a steel wire designed for such purpose. The minimum breakage of the wire shall be connected to the safety factor, which is not less than (8) of the tensile force generated in the wire of over speed governor when releasing, taking into consideration that the friction factor (μmax) shall be (0.2) of the over speed governor of traction type, and the nominal diameter of the wire shall not be less than 6 mm.

7) The over speed governor, or any other device, shall stop the lift machine through electrical safety device before the car reaches the speed required for releasing it in rising or landing.

8) If the over speed governor failed to automatically return to its original status after releasing the safety device, the electrical safety device shall stop the lift from moving at the time of the over speed governor failure to return to its original status.

9) The over speed governor shall be accessible for inspection and maintenance purposes. If it is installed in the pit, access shall be possible from outside the well.

Annex (4)

Conformity Assessment Form (Type 3) as per ISO/IEC 17067

(Type Approval Based on Quality Assurance of Production Process)

1 Type Approval Based on Quality Assurance the Production Process

A model of conformity assessment procedures, by which the supplier fulfills the obligations set out in the items below, while ensuring and acknowledging - on its sole responsibility - that the concerned products are in conformity with the type specified in the Type Approval Certificate and comply with the requirements of the relevant technical regulations.

2 Manufacturing

The supplier shall operate with a certified Product Safety Management System, to ensure the safety of the product, including production lines, final inspection and testing of the concerned products as per Clause (3), and shall be subject to periodic surveillance as per Clause (4).

3 Product Safety Management System

3/1 The supplier shall submit a request to a Notified Body "Third party" of its choice, in order to evaluate the safety management system of concerned products.

The request shall include:

1) Name and address of the supplier, and the name and address of the official representative, in case the representative submits the request.
2) The manufacturer shall be officially licensed by the relevant authorities in the country of origin.
3) A written declaration not to submit the same request to any other Notified Body "Third Party".
4) All relevant information regarding the concerned product category.
5) Documentation of the Product Safety Management System.
6) Technical documents of the certified type, and a copy of the Type Approval Certificate.

3/2 The Product Safety Management System shall guarantee that the manufactured products are in conformity with the type specified in the Type Approval Certificate, and with the requirements of the relevant technical regulations.

3/3 All the system elements and its requirements - adopted by the supplier - shall be documented in a systematic and orderly manner in a form of written policies, procedures and instructions. The documents of the Product Safety Management System shall provide a consistent understanding of the safety

programs, plans, manuals and records. Such documents shall contain, in particular, an adequate description of the following:

A) Quality objectives, organizational structure, responsibilities and competences of the management regarding the safety of the product.
B) Manufacturing techniques, product safety and quality assurance procedures, and applied processes and procedures.
C) Executed inspections and tests; before, during, and after manufacturing, and the frequency with which they will be carried out.
D) Records: such as inspection, testing, calibration reports, and the qualification documents of relevant personnel, etc.
E) Means of control for achieving the required product safety and the effective operation of the Product Safety Management System.

3/4 The Notified Body, approving the Product Safety Management System, shall assess such system to determine whether it satisfies the requirements referred to in Clause (3/3), during the period of the approval of the system, which shall be three years.

3/5 The product shall be presumed to comply with the requirements of the technical regulations, in relation to the items of the Product Safety Management System, whenever it conforms to the standards.

3/6 In addition to experience in the relevant product safety, the auditing team shall have one technical expert - at least – who is experienced in the assessment of the field and techniques of manufacturing of the product, and is fully aware of the technical requirements stipulated in the relevant technical regulations.

3/7 The audit shall include an assessment visit to the factory. The auditing team shall review the technical documents referred to in Clause (3/3), in order to verify the manufacturer's ability to identify the requirements of the technical regulations and carry out the necessary examinations and tests to ensure compliance of the product with these requirements.

3/8 The manufacturer shall be notified of the decision after the end of the assessment, provided that such notice include audit findings, assessment decision, along with the justifications on which the decision was based.

3/9 The manufacturer shall be committed to satisfy the obligations of the Product Safety Management System, as approved, and to maintain the system so that it remains adequate and efficient.

3/10 The manufacturer shall notify the conformity assessment body, which approved the Product Safety Management System, of any proposed modifications to the system.

3/11 The Notified Body shall evaluate any proposed modifications and decide whether the modified Product Safety Management System will continue to satisfy the requirements referred to in Clause (3/3) or a reassessment is necessary. The Notified Body shall notify the manufacturer of its decision; the notification shall include testing results along with the justifications of the assessment decision.

4 Periodic Surveillance Under the Responsibility of the Notified Body

4/1 The purpose of periodic surveillance is to verify the extent of which the supplier meets the obligations of the certified Product Safety Management System.

4/2 For assessment purposes, the supplier shall allow the Notified Body, during the validation period, to enter the manufacturing, inspection, testing and storage sites. The supplier shall provide the Notified Body with all necessary information, particularly, the Product Safety Management System documents and safety records, such as testing and calibration reports, and the qualification documents of relevant personnel, etc.

4/3 The Notified Body shall carry out periodic audit visits to verify that the manufacturer applies and maintains the Product Safety Management System, and shall provide the supplier with an audit report.

4/4 The Notified Body have the right to perform unexpected visits to the factory. During such visits, the Notified Body may, as necessary, carry out product tests, or have them carried out by a third party, in order to verify that the Product Safety Management System is properly functioning. The Notified Body shall provide the supplier with an assessment report, and testing reports, in case of testing.

5 Certificate of Conformity and Declaration of Conformity

5/1 The Notified Body shall issue a Certificate of Conformity for the product in case the supplier has an effective and certified Product Safety Management System, upon the request of the supplier, within the validity period.

5/2 The Notified Body shall identify the product details in each request, clarify such details in the issued Certificate of Conformity, and record them in the electronic portal for conformity (in SASO).

5/3 The supplier shall provide a written Declaration of Conformity for each approved product type (Type Approval), and shall put it at the Regulatory Authorities and Market Surveillance Authorities disposal for a period of ten (10) years, at least, after the placement of the product in the market. The Declaration of Conformity of the supplier shall identify the approved product type. Furthermore, a copy of the

Certificate of Conformity and the Declaration of Conformity shall bat the Regulatory Authorities and Market Surveillance Authorities disposal request.

5/4 The supplier shall put the following documents at the Regulatory Authorities and Market Surveillance Authorities disposal, for a period of ten (10) years, at least, after placement of the product in the market:

- Documentation referred to in Clause (3/3).
- The amendments referred to in Clause (3/9), as approved.
- Decisions and reports of the Notified Body, referred to in Clause (3/7).

5/5 Each Notified Body shall inform the Regulatory Authorities and Market Surveillance Authorities of issueor withdrawn Product Safety Management System approvals, and shall periodically or upon request, provide lists of Product Safety Management System approvals that have been rejected, suspended, or restricted by any means; on a regular basis or upon request. Each Notified Body shall inform, upon request, the other Notified Bodies of Product Safety Management System approvals it has rejected, suspended, withdrawn, or restricted; and notify such bodies of Product Safety Management System approvals issued by it.

Annex (5)

Safety Components List

1) Safety gear

2) Landing door locking device

3) Over speed governor

4) Safety circuits containing electronic components

5) Ascending car overspeed protection means.

6) Unintended car movement protection means.

7) Buffers /shock absorber.

Annex (6)

Supplier Declaration of Conformity

This form shall be filled on the company's official paper

1) **Declaration of conformity to safety component**

Name and address of safety component manufacturer: ----------

Tel: ----------

E-mail: ----------

Name of the official representative of safety component supplier: ----------

Description of safety component: Type (---------) Serial No -If any: (-------)

Manufacturing year of safety component: (----------)

Country of manufacture: ----------

All relevant requirements met in the safety component: ----------

Relevant standard specifications: ----------

Name and address of laboratory that performed the type test: ----------

Test Report No: ---------- Date: ----------

2) Conformity declaration for the lift

Name and address of lift supplier: ----------

Tel: ----------

E-mail: ----------

Manufacturing year of the lift: (----------)

Country of manufacture: ----------

All relevant requirements met in the lift: ----------

Relevant standard specifications: ----------

Name of the representative of lift supplier: ----------

This declaration shall be in Arabic, or in both Arabic and English.

We do hereby declare that the product stated in this declaration is in conformity to the Saudi Technical Regulation stated hereinabove.

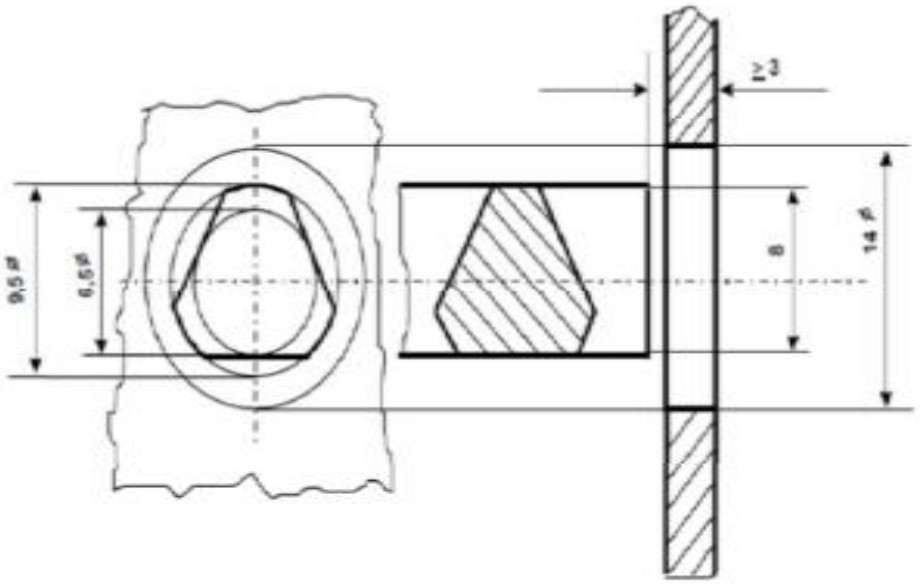
Official: ----------

Signature: ---------- Date: ----------

Annex (7)

Unlock Triangle

Dimensions in millimeters



Annex (8)

Inspection body logo

LEFT INSPECTION CERTIFICATE

APPROVED INSPECTION BODY: ----------

LOCATION (In Saudi Arabia): ----------

PHONE: ---------- FAX: ----------

E-mail: ----------

LIFT OWNER

Name	
Address	
Location	

INSPECTED LIFT

Lift No		Year Installation	
CAR SPEED (FPM)		Classification	
Max Load		Load Test Variance	

Periodic Inspection

Inspector Name	Inspection Date	Expiration Date

COMMISSIONER OF LABUR	DEPUTY LABOR COMMISSIONER
Signature	Signature

The Certificate shall be posted under glass cover in the lift car. The certificate authorizes operation of this lift until expiration date.