Saudi Standards, Metrology and Quality Organization
SASO

Technical Regulation for Machinery Safety – Part 2: Mobile Machinery and Heavy Duty Equipment

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Note:

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

Contents

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), 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 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 shall be the authority in charge 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:

KSA: The Kingdom of Saudi Arabia**.**

The Board: SASO's Board of Directors.

SASO: Saudi Standards, Metrology and Quality Organization

Regulatory Authorities: Governmental 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.

Market Surveillance Authorities: Governmental body/ bodies responsible for carrying out market surveillance operations, to verify that the products comply with the requirements stipulated in the technical regulations issued by the Board of Directors.

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

Product: Mobile machinery, heavy duty equipment, and associated safety components and interchangeable equipment

Standard: A document specifying the characteristics of commodity, material, service, or anything that is subject to measurement. The standard also offers descriptions, characteristics, level of quality, dimensions, measurements, safety and security requirements. It may include or pay attention to terms, codes, testing methods, sampling, packaging, and requirements of markings or labelling.

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

Hazard(s): A potential source of harm.

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

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.

Supplier:

- A product manufacturer, in case that he is resident in KSA, or the person identified as the manufacturer of the product, through linking the product to their name, or to a relevant commercial description, or any person who provides a product renewal.
- An agent, if the manufacturer is resident outside KSA or an importer in the absence of an agent of the manufacturer.
- Any person in the supply chain, whose activities may affect the product properties.

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

Notified Bodies: Conformity Assessment Bodies, approved by SASO in accordance with the Regulation of Conformity Assessment Bodies Acceptance.

Certificate of Conformity: A certificate issued by SASO or a 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 of the 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 the 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 the KSA, in the course of a commercial activity, whether 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.

Machine(s): A set equipped or designated to be equipped with a movement system that operates on other than human or animal power. The machine consists of connected parts to perform a specific task, provided that that at least one part of it is moving.

Interchangeable Equipment: A device that the operator - after using the machine - combines or integrates with the machine to modify its function or to create a new function.

Safety Components: Parts or tools that perform a safety function, and are placed independently in the market, where the failure and/or malfunction of such parts endanger the safety of people, and such parts are not necessary for the function of the machine.

Electromagnetic Disturbance: any electromagnetic occurrence that may limit/reduce the efficiency of equipment performance. Electromagnetic disturbance may be an electromagnetic noise, an unwanted signal, or a change in the same propagation medium.

Electromagnetic Immunity: The ability of an electrical equipment or a unit of an electrical equipment or system to perform its function without being affected by any electromagnetic disturbance.

Electromagnetic Environment: All electromagnetic phenomena that can be observed in a particular location.

Electromagnetic Compatibility: The ability of an electrical equipment, or a unit of an electrical equipment or system to function adequately in its electromagnetic environment without affecting any component of that environment by improbable electromagnetic disturbances.

Person at Risk: Any person who is totally or partly present in the danger zone specified by the manufacturer.

Operator: The person or persons who install, operate, modify, maintain, clean, repair, or move machines.

Driver: "The driver" is the operator responsible for moving the machine. The driver may be transported by the machine or on foot, as he is accompanying it, or he may direct the machine through a remote control unit.

Protector: A part of the machine used, which is a physical barrier used specially to provide protection.

Protection Device: A device that reduces risks (other than the protector), whether it is independently or combined with the protector.

Intended use: The use of machinery in accordance with the information contained in the instructions of use.

Reasonable Anticipated Misuse: The use of machinery in a manner contrary to what is specified in the instructions of use, except that it may be resulted from a human behavior that can be easily predicted.

Heavy Equipment: Machinery intended for use in construction and soil moving; they are self-propelled machinery or machine drawn on wheels, crawlers, or legs, with equipment or tools primarily designed to perform excavation, loading, and

transportation, or expanding, compacting, or digging trenches of soil, rocks and other materials, on roads, dams, in quarries, mines, and construction sites.

Note: Machinery can be of the type directly controlled by the operator by riding on the machine, or can be remotely controlled by wired or non-wired means with direct or indirect visibility of the work area.

1/2 Other terms and expressions specified in this Regulation shall have the meanings specified in the applicable laws, regulations, and decrees of SASO.

Article (2) Scope

This Technical Regulation shall apply to mobile machinery, heavy duty equipment, safety components and interchangeable equipment, in accordance with the definitions and terminology contained in Article (1) and the relevant standards contained in Annex (1).

Article (3) Objectives

This Technical Regulation aims to lay out the essential requirements of mobile machinery and heavy duty equipment included in the scope of this Technical Regulation, and to identify the conformity assessment procedures with which suppliers shall comply, in order to ensure the conformity of such products to the basic requirements aiming at preservation of the environment, health and safety of the consumer, and facilitate market surveillance procedures.

Article (4) Obligations of Supplier

The supplier shall adhere to the following requirements:

4/1 General Basic Requirements for Machinery

4/1/1 General Principles

A) The supplier shall perform a risk analysis to ensure that the health and safety requirements applicable to machinery and safety components are identified, and the results of the risk analysis shall be considered when designing and manufacturing machinery, safety components and lifting equipment.

The supplier - through an iterative process of risk analysis and reduction - shall:

1) Determine the functioning of machinery and the safety components that include their intended use, and define any expected misuse.

2) Determine the risks that may be generated by machinery, safety components, and associated hazardous situations and cases.

3) Assess or estimate risks, taking into account the severity of injury or potential harm to health and the likelihood that they will occur.

4) Eliminate risks or reduce risks and limit the negative impacts associated with them through preventive measures according to priority set forth in Paragraph 1/1-b of Annex (2).

B) The obligations contained in the basic health and safety requirements Clause (1/1) of Annex (2), only apply when there are similar risks arising from the use of the machinery and safety components concerned in the probable conditions expected by the manufacturer or supplier, or in the expected extraordinary situations.

C) Conformity assessment procedures shall include all principles of integrity in safety, the requirements for machinery and safety components, and the instructions provided in Annex (2).

D) It shall be taken into account when designing the machine, the fulfillment of the basic health and safety requirements stipulated in Annex (2), as much as possible.

4/2 Operating Positions

4/2/1 Benches

- The vision in the driving position shall be completely clear so that the driver can operate the machine and its equipment under conditions of reasonable use with complete safety, and when necessary, appropriate devices shall be provided to face the hazards resulting from inadequate vision.
- The machines on which the driver is transported shall be designed and built in such a way - in driving positions - preventing exposure of hazard to the driver caused by accidental friction or contact with the wheels and chains.
- The driving position inside the machine shall be designed in a way that allows the installation of the driver's cabin, provided that this does not increase the risks and that there is sufficient space for it, and the cabin shall adhere to the necessary instructions for the safety of the driver set forth in Annex (2).
- There are some risks that operators or other individuals who are riding the moving machine may be exposed to, such as being run over between parts of the machine and the ground when the machine is turned or overturned, especially those machinery equipped with protective structures, which necessitates their seats to be designed and provided with a fastening system (belt) to ensure the safety of persons and keeping them in their designated seats, provided that the installation of such systems (fastening systems) does not increase the risks indicated in Annex (2), without limiting the movement required for operations or movements related to the body.

4/2/2 Positions of Other People

It shall be taken into account - if the conditions of use require the transportation of persons other than the drivers of the machine from time to time or on a regular basis - the appropriate conditions that enable them to move by the machine or work on it without exposure to any risks as indicated in Annex (2).

4/3 Control Systems

- Whenever necessary, effective steps shall be taken to prevent unauthorized use of the controls.
- In remote control situations, each control unit shall clearly define the machinery controlled by that unit, and the remote control systems shall be designed and prepared in such manner that only affects the specified machines and functions.
- Remotely controlled machinery shall be designed and installed in such manner that they respond only to signals sent from the relevant control units.

4/3/1 Control Devices

- The driver shall be able to manage all the control devices required to operate the machinery from the driving position, except for functions that can be performed with complete safety using service devices located elsewhere, and such functions include - in particular - those for which operators other than the driver are responsible, or for which the driver shall leave the driving position to control them safely.
- In case of pedals, they shall be designed and installed in such manner that ensures safe operation for the driver with minimal risks of incorrect operation. The pedals shall be designed in a manner that they are easy to be cleaned and provided with a non-slip surface.
- Control devices shall return to neutral whenever the operator leaves them - if operating such devices may cause significant risks and dangerous movements, with the exception of devices provided with preset modes.
- In the case of wheeled machinery, the steering system shall be designed and installed in such manner that limits the force of unintended movements of the steering wheel or steering arm resulting from shocks to the steering wheels.
- Any control that unlocks the differential gear lock shall be designed and configured in manner that allows the differential unlocking while the machine is in motion.
- Requirements of warning devices related to visual and/or acoustic warning signals contained in Annex (2) shall not apply except in the case of reverse movement.

4/3/2 Starting/Moving

All movements of self-propelled machinery driven by a driver shall only be possible in a driver-controlled condition.

There shall be no possibility of unintended machine movement while the engine is running.

When the machines are equipped with devices that exceed the boundaries of normal view area, the driver shall be provided with easy means to verify that such devices are in a specific position that allows safe movement, prior to moving the machinery.

4/3/3 Mobility Function

Without prejudice to traffic regulations, the self-propelled machinery and their trailers shall meet the requirements for slowing down, stopping and braking, in order to ensure safety under all permissible conditions of operation, load, speed, ground condition and ground slope.

The driver shall be able to slow down and stop the self-propelled machinery with a primary device, and when the primary device fails, or when the power supply necessary to operate the primary device is interrupted, an emergency device equipped with a fully independent control device that can be easily accessed - when safety requires so - shall be provided in order to slow down and stop the machinery.

When safety requires so - a device (means) shall be provided to stop the equipment to make the machinery stationary and immovable, and such device can be combined with one of the devices referred to in the previous paragraph, provided that it shall be completely mechanical.

Remote controlled machinery shall be equipped with devices for automatic and immediate shutdown, to prevent the possibility of dangerous operation illustrated in the following situations:

- When the driver loses control of the machine.
- When the driver receives stop signals.
- When malfunctions are detected in a part of the safety system.
- When the verification signals are not detected within a specified time.
- Shutdown requirements mentioned in Annex (2) shall not apply to the mobility function.

4/3/4 Movement of Machinery Controlled by Pedestrians

The movement of self-propelled machinery controlled by pedestrians shall be possible while the driver is constantly working on the relevant control device, and in particular, machines shall not move during the startup of the engine.

Pedestrian-controlled machinery control systems shall be designed in such manner that reduces the risks arising from unintended movement of the machine towards the driver, in particular, crushing or injury from rotating parts.

The travel speed of the machine shall match the speed of the driver's walking on his feet.

The operation of the rotating part when operating the reverse control shall not be possible, in the case of machinery on which rotating parts can be installed, unless the movement of the machine is caused by the movement of such part, and in the latter case the reverse movement shall not endanger the driver.

4/3/5 Control Circuit Failure

Failure (interruption) of the power supply to the power steering (driver assistance system in moving the steering wheel) - when installed - shall not prevent the machine from being steered during the time required to stop it.

4/4 Prevention of Mechanical Risks

4/4/1 Uncontrolled Movement

Machinery shall be designed, manufactured and, where necessary, installed on their moving supports in such manner ensuring that when they are in motion, the uncontrolled vibrations of their center of gravity will not affect the stability of the machinery or cause excessive stress on their bodies.

4/4/2 Moving Parts Involved in Working

Movable protectors preventing access to the moving parts in the engine compartment shall not contain movable interlock devices, when access requires a tool, switch, or control element located in the driving position.

4/4/3 Roll Over and Overturn

Machinery shall be equipped with a protective body suitable for the people being carried, unless this increases the risk.

This body shall be designed in such manner that provides the carried person with adequate protection from deformations of the body caused by rolling over or turning upside down.

The manufacturer or supplier shall perform appropriate tests on all structures used to verify that the body meets the indicated requirements.

4/4/4 Falling Objects

Machinery shall be designed in a manner that takes into account risks of falling objects or materials on self-propelled machinery, while providing them with an appropriate protection body if their size and dimensions allow this.

This body shall be designed in such a way as to provide the carried person with adequate protection from deformations of the body in the case of falling objects or materials. The manufacturer or supplier shall perform appropriate tests on all structures used to verify that the body complied with the indicated requirements.

4/4/5 Ways of Access

Hand grips and foot positions shall be designed and arranged in a way that enables the operator to use them automatically without the need for service devices to help him reach operation locations.

4/4/6 Traction/Towing Devices

All machinery used for traction or for towing shall be fitted with a traction tool designed, manufactured and arranged in a manner that ensures easy conjunction and safe disengagement, and prevents accidental disconnection during use.

To the extent that the traction shaft load is required, machinery shall be equipped with a support fitted with a bearing surface suitable for the load and the ground.

4/4/7 Power Transmission between Self-propelled (tractor) and Receiving Machinery

Removable mechanical transmission devices that connect the self-propelled (tractor) machinery to the first bearer fixed to the receiving machinery shall be designed in such a way that any part moving during operation is protected along its length.

In the case of self-propelled machinery (tractor), the external shaft to which a removable mechanical transmission is attached shall be protected, whether by a protector attached and connected to the self-propelled machine (tractor) or by any other device providing equivalent protection.

This protector shall be easily opened so that the removable transmission can be accessed, and with it in place, there shall be sufficient space so that the shaft does not destroy the protector when the machine (tractor) is moving.

The input shaft shall be enclosed by a machine-fixed welding packing for the receiving machinery.

Torque limiters or free wheels can be installed at shaft transmissions on the parallel side of the receiving machine; in this case, the assembly direction shall be indicated on the removable mechanical transmission.

All receiving devices whose operation requires removable mechanical transmission devices to be connected to self-propelled machinery (tractor) shall include a system for connecting removable mechanical transmission devices, so that the removable mechanical transmission device and the accompanying protector device are not damaged when it comes into contact with the ground or any part of the machine.

The external parts of the shield shall be designed, installed, and arranged in such a way that they cannot rotate with a removable mechanical transmission, and the protector shall cover the transmission to the end of the internal jaws in the case of simple general connections and at least reach the outer connection center or the connections center if wide-angle general connections are used.

If the means of access to the operating positions are close to the removable mechanical transmission device, this means that they shall be designed and installed in a way that prevents using the pillar protectors as a foothold, unless they are designed for this purpose.

4/5 Prevention of Other Risks

4/5/1 Batteries

The housing/position of the electric batteries shall be designed in such a way as to prevent the battery fluid being ejected onto the operator when the machine is rolled over or turned upside down, and to prevent the accumulation of vapors in the places where the operators work.

The machinery shall be designed in such a way that the battery can be disconnected, with the help of an accessible, purpose-built device.

4/5/2 Fires

Based on the risks anticipated by the manufacturer, machinery, when their size permits, shall either allow easy-to-access fire extinguishers to be installed, or to be equipped with fire extinguishing system that are an integral part thereof.

4/5/3 Emissions of Hazardous Substances

The operator shall be protected from exposure to hazardous emissions when the primary function of the machinery is to spray products.

4/6 Information and Signals

4/6/1 Signs, Signals and Warnings

Every machine shall - whenever needed - have signs and/or instruction panels related to use, adjustment and maintenance, to ensure the health and safety of people. Such signs shall be selected, designed and positioned in a way that makes them clear and in place.

Without prejudice to the provisions of the traffic law and its implementing regulations, the machinery driven by a driver shall contain the following equipment:

- Acoustic warning device to alert people.

- A traffic light system that lights up according to the conditions of the intended use, but the latter requirements shall not apply to machinery used for underground work that do not contain electrical energy.

- Whenever necessary, there shall be adequate connections between the trailer and the machinery to operate the traffic lights.

Remote controlled machinery, of which the operators under normal use conditions are exposed to the risk of crushing or collision, shall be equipped with appropriate means to indicate their movements or be provided with means that protect the operators from such risks. The same applies to machinery that their operation involves repeating forward and backward movements on a single axis, where the area at the rear of the machine is not directly visible to the driver.

Machinery shall be designed and manufactured in such a way that the operation of alarms and signals cannot be unintentionally obstructed, and when it comes to safety, such devices shall be provided with means to ensure their validity and that they are in a good condition, and their failure shall be clearly shown to the operator.

The machine shall be provided with signals that warn against approaching it at the time of operation, when the movement of the machine or its parts is particularly dangerous, and such signals shall be clear and readable remotely to ensure the safety of the persons whose work requires approaching it.

4/6/2 Labelling

Clear and non-removable labels shall be affixed to all machinery, including:

- Nominal power indicated in kilowatts.

- Mass in kilograms, in most cases.

And wherever possible:

- Maximum permissible traction force of the traction rod at the coupling hook, measured in Newtons.

- Maximum permissible vertical force on the coupling hook measured in Newtons.

4/6/3 Instructions

4/6/3/1 Vibrations

The instructions shall state the following information regarding the vibrations that the machine transmits to the hand, arm, or entire body:

- The total value of vibration to which the hands/arms of the operator are exposed, when this value exceeds (2.5 m/s2).

- Maximum root of average squared value of the weighted frequency acceleration to which the whole body is exposed when it exceeds 0.5 m/s. If this value does not exceed 0.5 m/s, then this shall be mentioned.

- Uncertainty of Measurement.

- These values shall refer either to the actual standardization of the machinery of interest or to values based on measurements taken from technically comparable machinery that represent the machinery to be produced in the future.

- Vibrations shall be measured using the standardization symbol/code most appropriate for the machinery of interest, and it is imperative that the operating conditions are explained during the measurement as well as the measurement symbols used.

4/6/3/2 Multiple Uses

Instructions attached to machinery that allow for a versatility of uses depending on the equipment being used, and instructions for interchangeable equipment shall include the information needed for the safe assembly, use of the primary machine, and the use of the primary machine and interchangeable equipment.

4/7 Technical Requirements

The supplier shall meet the technical requirements for mobile machinery and heavy duty equipment, safety components and related interchangeable equipment, as follows:

A) Mobile machinery, heavy duty equipment, safety components and related interchangeable equipment shall meet the technical requirements set out in the standards contained in Annex (1) of this Technical Regulation.

B) Mobile machinery, heavy duty equipment, safety components and related interchangeable equipment shall be designed and manufactured in such a way as to meet the basic technical requirements described in Annex (2), and the safety and health requirements for mobile machinery and heavy duty equipment.

C) Availability of an effective quality management system at the factory, (A factory that obtained the quality management system certificate in accordance with ISO 9001 shall be deemed as met the requirements of this clause).

4/8 Metrological Requirements

International system of units (SI Units), multiples or parts thereof shall be used for mobile machinery and heavy duty equipment products, safety components and related interchangeable equipment, during design, manufacturing or trading, in accordance with the Saudi Measurement and Calibration System.

4/9 Packaging Requirements

A) Ensure that the mobile machinery and heavy duty equipment are assembled and arranged safely and properly during storage and transportation operations, in accordance with the packing requirements stipulated in the relevant standard.

B) Ensure that the packing materials for mobile machinery and heavy duty equipment are free of lead or any heavy metals.

Article (5) Labelling

The labelling for mobile machinery and heavy duty equipment intended for placement and display on the market shall fulfill the following:

5/1 Labels on the product shall meet the technical requirements mentioned in this Technical Regulation and the relevant standards contained in Annex (1) of this Technical Regulation.

5/2 Labels shall include warnings and operation instructions and the sales documentation stipulated in Annex (2), and shall be written in clear script and in a way that is difficult to be removed.

5/3 The data shall be written in Arabic or in Arabic and English.

5/4 All information used in the labelling shall be correct and proven.

5/5 Images and phrases used on the product packaging shall not violate the public order, public morals and Islamic values prevailing in the KSA.

Article (6) Conformity Assessment Procedures

6/1 The supplier - responsible for placing on the market - shall obtain a certificate of conformity issued by a notified body approved by SASO, in accordance with the Conformity Assessment Form (Type 1a) as per standard ISO/IEC 17067 as shown in Annex (2).

6/2 Safety components, interchangeable equipment, and spare parts for mobile machinery and heavy duty equipment – for model that obtained a certificate of conformity – shall be exempted from the conformity assessment procedures, supplied to the Saudi market by the manufacturer or the official representative of the manufacturer in the KSA.

6/3 The supplier of used mobile machinery and heavy duty equipment shall obtain an inspection certificate issued by a notified body approved by SASO.

6/4 The notified body shall carry out the conformity assessment procedures according to the specified form, in order to ensure fulfillment of the requirements of this regulation and the relevant Saudi Standards set forth in Annex (1).

6/5 The product shall be accompanied by a technical file that includes the following:

A) Supplier (Manufacturer/Importer) Declaration of Conformity in accordance with the form attached in Annex (3)

B) Risk Assessment Document as specified in Annex (4).

6/6 The supplier shall cooperate with the Regulatory Authorities and Market Surveillance Authorities by providing the technical file documents, certificates of conformity, and any other documented information proving the conformity of the product to the requirements of this Technical Regulation, upon request.

6/7 Mobile machinery, heavy duty equipment, safety components and related interchangeable equipment that have obtained the Saudi Quality Mark or its equivalent shall be deemed as met the requirements stipulated in this Technical Regulation.

6/8 In the event that the machine cannot be imported as a fully assembled finished product, and due to transport requirements with respect to logistics and permitted transport limits, the machine is allowed to be transported as separate parts, and a certificate of conformity for the finished product (model) shall be issued, provided that proof is submitted that the parts are dependent on the approved model.

Article (7) Responsibilities of Regulatory Authorities (Customs Ports and Factories)

Regulatory Authorities, as a part of their competence and powers, shall:

7/1 Verify that mobile machinery, heavy duty equipment, safety components and related interchangeable equipment fulfill the specified conformity assessment procedures, and the technical documents attached to the consignments.

7/2 Randomly take samples of mobile machinery, heavy duty equipment, safety components and relevant interchangeable equipment, and refer such samples to the competent laboratories to ensure their compliance with the requirements contained in this Technical Regulation.

7/3 Regulatory Authorities have the right to charge suppliers (manufacturers and importers) with the costs of tests and associated fees.

7/4 In case of a product non-conformity, Regulatory Authorities shall withdraw such products from warehouses, and take the necessary legal measures.

Article (8) Responsibilities of Market Surveillance Authorities

Market Surveillance Authorities, as a part of their competence and powers, shall:

8/1 Apply market surveillance procedures to the products displayed in the markets, and the products stored in the warehouses of traders and manufacturers, in order to verify the safety of the products and the extent of fulfillment of the requirements set forth in this Technical Regulation and the relevant standards.

8/2 Take samples of the product, whether from the market or the warehouse of suppliers (manufacturers and importers), in order to conduct the necessary tests and to ensure the conformity of such products to the requirements stipulated in this Technical Regulation.

8/3 In case of non-conformity of a product – supplied and stored – with the requirements of this Technical Regulation, Market Surveillance Authorities shall take all administrative measures including withdrawal and recall of such products. Procedures and penalties – stipulated in Article (9) – shall be applied after taking the necessary measures.

Article (9) Violations and Penalties

9/1 It is prohibited to manufacture, import, place display, or even advertise products that do not comply with the provisions of this Technical Regulation.

9/2 Failure to meet the requirements of this Technical Regulation 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 the consumer and the environment, in the following cases:

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

B) Failure to issue or improper issuance of the Certificate of Conformity or the Supplier Declaration of Conformity.

C) Unavailability or incompleteness of the technical documentation.

D) Unavailability or incompleteness of product data/labels or the usage guidelines.

9/3 In case of a violation of the provisions of this Technical Regulation, Market Surveillance Authorities – as the case may be - 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 – responsible for placing and displaying the product – to withdraw the product from the warehouses or markets in order to rectify 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 the markets. Market surveillance Authorities – as the case may be - may announce the withdrawal of the product from the markets, and the violating party shall bear all associated expenses.

9/4 When a violation is detected, SASO shall take the necessary measures against such products that violate the requirements of this Technical Regulation, including the cancellation of the relevant certificate of conformity, while taking the necessary measures with the notified body that issued the certificate, in accordance with the Regulation of Conformity Assessment Bodies Acceptance.

9/5 Without prejudice to any more severe sanction stipulated in the applicable regulations, whosoever violates the requirements of the adopted standards for products included in the scope of this Technical Regulation shall be subject to the sanctions stipulated in the Anti-Commercial Fraud Law.

Article (10) General Provisions

10/1 The supplier bears full legal responsibility for the implementation of the requirements of this Technical Regulation, and shall be subject to the penalties stipulated in the Anti-Commercial Fraud Law and/or any related laws, in case any violation of the articles of this Technical Regulation is proven.

10/2 This Technical Regulation shall not prevent the supplier to comply with all other systems/regulations applicable in the KSA; pertaining to trading, transporting, or storing the product, in addition to the rules/regulations related to the environment, security, and safety.

10/3 All suppliers of mobile machinery and heavy duty equipment, safety components and related interchangeable equipment, that are subject to the provisions of this Technical Regulation shall provide the inspectors of the Regulatory Authorities and Market Surveillance Authorities with all the facilitations and necessary information, when required, to carry out their assigned tasks.

10/4 Where a new case originates that cannot be treated under the provisions of this Technical Regulation, or where a dispute arises as a result of the application of those 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.

10/5 The supplier may submit a new request after elimination of the reasons of rejection, and after the necessary rectifications have been made. The supplier shall be responsible for any additional expenses determined by SASO.

10/6 SASO shall examine the complaints received regarding the products that have obtained a certificate of conformity or a Quality Mark, verify the validity of such complaints, and take the necessary legal actions in case of any violations.

10/7 SASO shall have the right to annul the Certificate of Conformity or the Quality Mark license if the supplier violates the provisions of this Technical Regulation, in accordance with the General Technical Regulation for Saudi Quality Mark, and shall take the legal actions to ensure the preservation of the rights of SASO.

10/8 Upon any modifications to the product during the validity period of the certificate of conformity or the Quality Mark license (except for formal modifications), the certificate or license for such product shall be annulled, and a new request shall be submitted.

10/9 SASO exclusively have the right to interpret the articles of this Technical Regulations. All beneficiaries of the application of this Technical Regulation shall adhere to the interpretations issued by SASO.

Article (11) Transitional Provisions

11/1 The supplier shall adhere to the provisions of this Technical Regulation within 180 days as of the date of publication in the Official Gazette.

11/2 Subject to the provisions of item (1) of this article, suppliers shall rectify their situation on the market in accordance with the provisions of this Technical Regulation within a period of 365 days as of the date of publication in the Official Gazette.

11/3 This Technical Regulation – once adopted – shall supersede all preceding regulations in the scope of this Technical Regulation.

Article (12) Publication

This Technical Regulation shall be published in the Official Gazette.

Annex (1)

A) List of Mobile Machinery and Heavy Duty Equipment Products and Related Standards

No.	Product	Standard Title in Arabic	Standard Title In English	Standard no.
1	Earth Moving Machinery And Equipment	معدات تحريك التربة – الواقيات – التعاريف والمتطلبات	Earth-Moving Machinery -- Guards -- Definitions And Requirements	SASO ISO 3457
2		معدات تحريك التربة -- أدوات الخدمة -- الجزء الأول: الصيانة العادية وأدوات الضبط	Earth-Moving Machinery -- Service Tools -- Part 1: Common Maintenance And Adjustment Tools	SASO ISO 4510-1
3		معدات تحريك التربة -- أدوات الخدمة -- الجزء الثاني: الدوافع والسواحب الميكانيكية	Earth-Moving Machinery -- Service Tools -- Part 2: Mechanical Pullers And Pushers	SASO ISO 4510-2
4		معدات تحريك التربة -- الآلات ذات الإطارات المطاطية - متطلبات التوجيه	Earth-Moving Machinery -- Rubber-Tyred Machines -- Steering Requirements	SASO ISO 5010
5		معدات تحريك التربة -- الحفارات الهيدروليكية ومعدات التحميل -- طرق تحديد قوى الأدوات	Earth-Moving Machinery -- Hydraulic Excavators And Backhoe Loaders -- Methods Of Determining Tool Forces	SASO ISO 6015
6		معدات تحريك التربة -- الانواع الأساسية -- التحديد والمصطلحات و التعاريف	Earth-Moving Machinery -- Basic Types -- Identification And Terms And Definitions	SASO ISO 6165
7		معدات تحريك التربة -- رموز أدوات التحكم للمشغل والرموز الأخرى التي تظهر على شاشات المعدات -- الجزء الأول: الرموز العامة	Earth-Moving Machinery -- Symbols For Operator Controls And Other Displays -- Part 1: Common Symbols	SASO ISO 6405-1
8		معدات تحريك التربة -- رموز أدوات التحكم للمشغِّل والرموز الأخرى التي تظهر على شاشات المعدات-- الجزء الثاني: الرموز المحدَّدة للمعدات والآلات والملحقات	Earth-Moving Machinery -- Symbols For Operator Controls And Other Displays -- Part 2: Specific Symbols For Machines, Equipment And Accessories	SASO ISO 6405-2
9		معدات تحريك التربة -- الأجسام القلابة -- التصنيف الحجمي	Earth-Moving Machinery -- Dumper Bodies -- Volumetric Rating	SASO ISO 6483
10		معدات تحريك التربة -- مكشطات الرفع – التقديرات الحجمية	Earth-Moving Machinery -- Elevating Scrapers -- Volumetric Ratings	SASO ISO 6484
11		معدات تحريك التربة -- المكشطة الجارة -- التصنيف الحجمي	Earth-Moving Machinery -- Tractor-Scraper -- Volumetric Rating	SASO ISO 6485
12		معدات تحريك التربة -- تحديد الأبعاد والأنظمة-- الجزء الأول: قاعدة الآلة	Earth-Moving Machinery -- Definitions Of Dimensions And Codes -- Part 1: Base Machine	SASO ISO 6746-1

13		معدات تحريك التربة -تحديد الأبعاد والأنظمة -- الجزء الثاني: المعدات وملحقاتها	Earth-Moving Machinery -- Definitions Of Dimensions And Codes -- Part 2: Equipment And Attachments	SASO ISO 6746-2
14		معدات تحريك التربة -- الحماية والتخزين	Earth-Moving Machinery -- Preservation And Storage	SASO ISO 6749
15		معدات تحريك التربة -- كتيّب التشغيل (المشغل) المحتوى والشكل	Earth-Moving Machinery -- Operator's Manual Content And Format	SASO ISO 6750
16		معدات تحريك التربة -- حواف القطع المستخدمة في الجرارات البلدوزرات، المدرجات الأرضية والمكشطات --الإشكال الرئيسية والابعاد الأساسية	Earth-Moving Machinery -- Cutting Edges Used On Tractor-Dozers, Graders And Scrapers -- Principal Shapes And Basic Dimensions	SASO ISO 7129
17		آلات تحريك التربة – المعدلات الحجمية للحاويات من النوع القلاب والجراف للحفارات الهيدروليكية والجرافات	Earth-Moving Machinery -- Volumetric Ratings For Hoe-Type And Grab-Type Buckets Of Hydraulic Excavators And Backhoe Loaders	SASO ISO 7451
18		معدات تحريك التربة -- تحديد أبعاد الدوران للآلات ذات العجلات	Earth-Moving Machinery -- Determination Of Turning Dimensions Of Wheeled Machines	SASO ISO 7457
19		معدات تحريك التربة -- المحمل (اللودر) وقواديس التحميل الأمامي للحفار -- التقديرات الحجمية	Earth-Moving Machinery -- Loader And Front Loading Excavator Buckets -- Volumetric Ratings	SASO ISO 7546
20		معدات تحريك التربة -- رؤوس ملوليه للحراث -- الأشكال والأبعاد (ماعدا أبعاد الأسنان الملولبة)	Earth-Moving Machinery -- Plough Bolt Heads -- Shapes And Dimensions (Excluding Thread Dimensions)	SASO ISO 7852
21		معدات تحريك التربة -- بطاقات سلامة المعدات-- مبادئ عامة	Earth-Moving Machinery -- Machine Safety Labels -- General Principles	SASO ISO 9244
22		معدات تحريك التربة -- ريش الجرار والجرار ذو العجلات- -مقننات حجمية	Earth-Moving Machinery -- Crawler And Wheel Tractor Dozer Blades -- Volumetric Ratings	SASO ISO 9246
23		آلات تحريك التربة – الكابلات والأسلاك الكهربائية -- أساسيات التمييز والعلامات	Earth-Moving Machinery -- Electrical Wires And Cables -- Principles Of Identification And Marking	SASO ISO 9247
24		معدات تحريك التربة -- البيئة المحيطة بالمشغل-- الجزء الأول : المصطلحات والتعاريف	Earth-Moving Machinery -- Operator Enclosure Environment -- Part 1: Terms And Definitions	SASO ISO 10263-1
25		معدات تحريك التربة -- أنظمة بدء مفتاح الإقفال	Earth-Moving Machinery -- Key-Locked Starting Systems	SASO ISO 10264

26		معدات تحريك التربة -- جهاز الاسترجاع المركب بالمعدات- -متطلبات الاداء	Earth-Moving Machinery -- Machine-Mounted Retrieval Device -- Performance Requirements	SASO ISO 10532
27		معدات تحريك التربة -- أجهزة دعم الذراع الأيسر	Earth-Moving Machinery -- Lift-Arm Support Devices	SASO ISO 10533
28		معدات تحريك التربة -- الحفارات الهيدروليكية – سعة الرفع	Earth-Moving Machinery -- Hydraulic Excavators -- Lift Capacity	SASO ISO 10567
29		معدات تحريك التربة -- قفل الإطار المفصلي-- متطلبات الأداء	Earth-Moving Machinery -- Articulated Frame Lock -- Performance Requirements	SASO ISO 10570
30		معدات تحريك التربة -- مقعد المشغل – الأبعاد والمتطلبات	Earth-Moving Machinery -- Operator's Seat -- Dimensions And Requirements	SASO ISO 11112
31		آلات تحريك التربة -- وصلة كهربائية مساعدة لبدء التشغيل الاضافي	Earth-Moving Machinery -- Auxiliary Starting Aid Electrical Connector	SASO ISO 11862
32		معدات تحريك التربة -- أماكن التشغيل والصيانة -- كلالة الحواف	Earth-Moving Machinery – Operation And Maintenance Areas – Bluntness Of Edges	SASO ISO 12508
33		معدات تحريك التربة -- دعم جسم القلاب -- وأجهزة دعم ميل مقصورة المشغل	Earth-Moving Machinery -- Dumper Body Support And Operator's Cab Tilt Support Devices	SASO ISO 13333
34		معدات تحريك التربة -- مقعد المدرب -- حجم حد الانحراف و غلاف الفضاء و متطلبات الأداء	Earth-Moving Machinery -- Trainer Seat -- Deflection Limiting Volume, Space Envelope And Performance Requirements	SASO ISO 13459
35		معدات تحريك التربة -- متطلبات السلامة لأنظمة التحكم عن بعد للمشغل	Earth-Moving Machinery -- Safety Requirements For Remote Operator Control Systems	SASO ISO 15817
36		آلات تحريك التربة – السلامة الوظيفية – الجزء ١: منهجية تحديد الأجزاء المتعلقة بالسلامة في نظام التحكم ومتطلبات الأداء	Earth-Moving Machinery -- Functional Safety -- Part 1: Methodology To Determine Safety-Related Parts Of The Control System And Performance Requirements	SASO-ISO-19014-1
37		معدات تحريك التربة -- نظم كشف الخطر والمعينات البصرية -- متطلبات الأداء والاختبار	Earth-Moving Machinery -- Hazard Detection Systems And Visual Aids -- Performance Requirements And Tests	SASO ISO 16001
38		معدات تحريك التربة -- السلامة -- الجزء الأول: المتطلبات العامة	Earth-Moving Machinery -- Safety -- Part 1: General Requirements	SASO ISO 20474-1
39		معدات تحريك التربة -- السلامة -- الجزء الثاني: متطلبات جرارات البلدوزر	Earth-Moving Machinery -- Safety -- Part 2: Requirements For Dozers	SASO ISO 20474-2

40		آلات تحريك التربة -- السلامة –الجزء الثالث: متطلبات للمحملات	Earth-Moving Machinery -- Safety --Part 3: Requirements For Loaders	SASO ISO 20474-3
41		آلات تحريك التربة -- السلامة –الجزء الرابع: متطلبات للجرافات	Earth-Moving Machinery -- Safety -- Part 4: Requirements For Backhoe-Loaders	SASO ISO 20474-4
42		آلات تحريك التربة -- السلامة –الجزء الخامس: متطلبات للحفارات الهيدروليكية	Earth-Moving Machinery -- Safety -- Part 5: Requirements For Hydraulic Excavators	SASO ISO 20474-5
43		آلات تحريك التربة -- السلامة –الجزء السادس: متطلبات للقلابات	Earth-Moving Machinery -- Safety -- Part 6: Requirements For Dumpers	SASO ISO 20474-6
44		آلات تحريك التربة -- السلامة –الجزء السابع: متطلبات للمكشطات(التراكتور)	Earth-Moving Machinery -- Safety -- Part 7: Requirements For Scrapers	SASO ISO 20474-7
45		آلات تحريك التربة -- السلامة –الجزء الثامن: متطلبات لممهدات الارض(آلات تسوية الارض)	Earth-Moving Machinery -- Safety -- Part 8: Requirements For Graders	SASO ISO 20474-8
46		آلات تحريك التربة -- السلامة –الجزء التاسع: متطلبات لمد الانابيب	Earth-Moving Machinery -- Safety -- Part 9: Requirements For Pipelayers	SASO ISO 20474-9
47		آلات تحريك التربة -- السلامة –الجزء العاشر: متطلبات لحفارات الخنادق	Earth-Moving Machinery -- Safety -- Part 10: Requirements For Trenchers	SASO ISO 20474-10
48		آلات تحريك التربة -- السلامة –الجزء الحادي عشر: متطلبات لتسوية الارض ودفن النفايات	Earth-Moving Machinery -- Safety -- Part 11: Requirements For Earth And Landfill Compactors	SASO ISO 20474-11
49		آلات تحريك التربة -- السلامة –الجزء الثاني عشر: متطلبات لحفارات الكابل(حبل من الاسلاك المعزولة)	Earth-Moving Machinery -- Safety -- Part 12: Requirements For Cable Excavators	SASO ISO 20474-12
50		آلات تحريك التربة -- السلامة –الجزء الثالث عشر: متطلبات لبكرات التسوية	Earth-Moving Machinery -- Safety -- Part 13: Requirements For Rollers	SASO ISO 20474-13
51		معدات تحريك التربة -- المثاقب الأفقية- المصطلحات الفنية والمواصفات	Earth-Moving Machinery -- Horizontal Directional Drills -- Terminology And Specifications	SASO ISO 21467
52		معدات تحريك التربة -- متطلبات الأداء لخزانات الوقود غير المعدنية	Earth-Moving Machinery -- Performance Requirements For Non-Metallic Fuel Tanks	SASO ISO 21507
53		آلات تحريك التربة -- أنظمة الحماية من السرقة -- التصنيف و الأداء	Earth-Moving Machinery -- Anti-Theft Systems -- Classification And Performance	SASO ISO 22448
54		آلات تحريك التربة -- رابط الجرافة ذات العجلات للمرفقات	Earth-Moving Machinery -- Wheeled Loader Coupler For Attachments	SASO ISO 23727

55		معدات تحريك التربة -- ملحقات تقارير لأربطة المحملات (اللودرات)	Earth-Moving Machinery -- Coupling Of Attachments To Skid Steer Loaders	SASO ISO 24410
56		ماكينات تحريك التربة والشاحنات المتغيرة الارتفاع للتضاريس الوعرة -- متطلبات تصميم الماكينات المخصصة للاستخدام على الطريق	Earth-Moving Machinery And Rough-Terrain Variable-Reach Trucks -- Design Requirements For Machines Intended To Be Driven On Road	SASO GSO ISO 17253
57		آلات تحريك التربة -- نظم التحكم في الآلات باستخدام المكونات الإلكترونية – الجزء ٢: استخدام وتطبيق المواصفة القياسيةISO 15998	Earth-Moving Machinery -- Machine Control Systems (MCS) Using Electronic Components -- Part 2: Use And Application Of ISO 15998	SASO GSO ISO/TS 15998-2
58	Agricultural Machinery And Equipment	الجرارات الزراعية والآلات ذاتية الدفع للزراعة والغابات المحتويات– المحيطة بالمشغل- الجزء الأول: المفردات	Tractors And Self-Propelled Machines For Agriculture And Forestry - Operator Enclosure Environment - Part 1: Vocabulary.	SASO ISO 14269-1
59		الجرارات الزراعية والآلات ذاتية الدفع للزراعة والغابات المحتويات– المحيطة بالمشغل– الجزء الثالث: تقدير تأثير التدفئة الشمسية	Tractors And Self-Propelled Machines For Agriculture And Forestry - Operator Enclosure Environment -Part 3: Determination Of Effect Of Solar Heating.	SASO ISO 14269-3
60		الجرارات والآلات الزراعية توصيل– المعدات عن طريق نقاط الربط الثلاث خلوص المنطقة حول المعدات	Agricultural Tractors And Machinery - Connection Of Implements Via Three-Point Linkage – Clearance Zone Around Implement.	SASO ISO 2332
61		المعدات والجرارات الزراعية ذات العجلات وصلات نقاط الشد الثلاث– – الجزء الأول: وصلة على شكل حرف U	Agricultural Wheeled Tractors And Implements - Three-Point Hitch Couplers - Part 1: U-Frame Coupler.	SASO ISO 11001-1
62		المعدات والجرارات الزراعية ذات العجلات وصلات نقاط الشد الثلاث– – الجزء الثاني: وصلة على شكل حرف A	Agricultural Wheeled Tractors And Implements - Three-Point Hitch Couplers - Part 2: A-Frame Coupler.	SASO ISO 11001-2
63		المعدات والجرارات الزراعية ذات العجلات وصلات نقاط الشد الثلاث– – الجزء الثالث: وصلة الربط.	Agricultural Wheeled Tractors And Implements - Three-Point Hitch Couplers - Part 3: Link Coupler.	SASO ISO 11001-3
64		المعدات والجرارات الزراعية ذات العجلات وصلات نقاط الشد الثلاث– – الجزء الرابع: الوصلة القضيبية.	Agricultural Wheeled Tractors And Implements - Three-Point Hitch Couplers - Part 4: Bar Coupler.	SASO ISO 11001-4
65		الجرارات للزراعة والغابات– الجرارات ذات عجلات بمسار ضيق الجزء ١: هياكل الحماية عند الانقلاب ذات التثبيت الأمامي	Agricultural And Forestry Tractors - Narrow-Track Wheeled Tractors - Part 1: Front-Mounted Roll-Over Protective Structures.	SASO ISO 12003-1

66		الجرارات للزراعة والغابات– الجرارات ذات عجلات بمسار ضيق الجزء ٢: هياكل الحماية عند الانقلاب ذات التثبيت الخلفي	Agricultural And Forestry Tractors - Narrow-Track Wheeled Tractors - Part 2: Rear-Mounted Roll-Over Protective Structures.	SASO ISO 12003-2
67		الجرارات الزراعية ذات العجلات وملحقاتها الأحمال الأمامية– – الأحمال للملحقات.	Agricultural Wheeled Tractors And Attachments - Front Loaders - Carriages For Attachments.	SASO ISO 23206
68		الآلات الزراعية – السلامة – الجزء ١: المتطلبات العامة	Agricultural Machinery - Safety – Part 1: General Requirements	SASO-ISO-4254-1
69		الجرارات والآلات للزراعة والغابات– الوسائل التقنية لضمان السلامة- الجزء ٣: الجرارات	Tractors And Machinery For Agricultural And Forestry - Technical Means For Ensuring Safety - Part 3: Tractors.	SASO ISO 4254-3
70		الجرارات والآلات للزراعة والغابات– القدرة الإضافية- الموصل لموقع المشغل.	Tractors And Machinery For Agriculture And Forestry - Auxiliary-Power - Transmission Connector For The Operator Station.	SASO ISO 17612
71		الجرارات للزراعة والغابات– السلامة الجزء الأول: الجرارات- القياسية	Tractors For Agriculture And Forestry -- Safety -- Part 1: Standard Tractors	SASO ISO 26322-1
72		الجرارات الزراعية المشغل ومجال– الرؤية	Tractors For Agriculture -- Operator's Field Of Vision	SASO ISO 2457
73		الجرارات والآلات للزراعة والغابات- التحكم التسلسلي وشبكة بيانات الاتصال الجزء الثالث: طبقة وصلة البيانات	Tractors And Machinery For Agriculture And Forestry -- Serial Control And Communications Data Network -- Part 3: Data Link Layer	SASO ISO 11783-3
74		الجرارات الزراعية عمود مأخذ– القدرة الخلفي الأنواع ١،٢،٣ - الجزء ٢: جرارات المسار الضيق، أبعاد الواقي الرئيسي وحيز الخلوص	Agricultural Tractors - Rear-Mounted Power Take-Off Types 1, 2 And 3 - Part 2: Narrow-Track Tractors, Dimensions For Master Shield And Clearance Zone.	SASO ISO 500-2
75		الجرارات والآلات الزراعية عمود– إدارة مأخذ القدرة ووصلة دخل القدرة– الجزء ١: التصنيع العام ومتطلبات السلامة	Agricultural Tractors And Machinery - Power Take-Off Drive Shafts And Power-Input Connection - Part 1: General Manufacturing And Safety Requirements.	SASO ISO 5673-1

76		الجرارات والآلات الزراعية عمود– إدارة مأخذ القدرة ووصلة دخل القدرة- الجزء ٢: المواصفات لاستعمال عمود إدارة مأخذ القدرة (PTO)، وموقع وخلوص خط عمود إدارة مأخذ القدرة (PTO) و (PIC) للملحقات المختلفة	Agricultural Tractors And Machinery - Power Take-Off Drive Shafts And Power-Input Connection – Part 2: Specification For Use Of PTO Drive Shafts, And Position And Clearance Of PTO Drive Line And PIC For Various Attachments.	SASO ISO 5673-2
77		الجرارات الزراعية ذات العجلات– مقعد المشغل مختبر القياس للاهتزاز– المرسل	Agricultural Wheeled Tractors - Operators Seat - Laboratory Measurement Of Transmitted Vibration.	SASO ISO 5007
78		مجال الآلات والجرارات الزراعية ذات العجلات مقياس اهتزاز الجسم الكامل– للمشغل	Agricultural Wheeled Tractors Field Machinery - Measurement Of Whole-Body Vibration Of The Operator.	SASO ISO 5008
79		المركبات الزراعية الروابط– الميكانيكية على المركبات المسحوبة– الجزء الأول: الأبعاد وحلقة الشد للمقطع العرضي 30 / 50 مم	Agricultural Vehicles - Mechanical Connections On Towed Vehicles - Part 1: Dimensions For Hitch Rings Of 50 / 30 Mm Cross Section.	SASO ISO 6789-1
80		المركبات الزراعية الروابط– الميكانيكية على المركبات المسحوبة– الجزء الثاني: حلقة الارتباط 40 مع المقبض	Agricultural Vehicles - Mechanical Connections On Towed Vehicles - Part 2: Coupling Ring 40 With Socket.	SASO ISO 5692-2
81		الجرارات والآلات للزراعة والغابات– التركيب للإضاءة، إشارة الإضاءة وأدوات العلامات للسفر على الطرق العامة	Tractors And Machinery For Agricultural And Forestry - Installation Of Lighting, Light Signalling And Marking Devices For Travel On Public Roadways.	SASO ISO 16154
82		الجرارات والآلات للزراعة والغابات– قصر القدرة الهيدروليكية.	Agricultural And Forestry Tractors And Implements - Hydraulic Power Beyond.	SASO ISO 17567
83		الجرارات والآلات للزراعة والغابات- التحكم التسلسلي وبيانات شبكة الاتصال- الجزء الأول: المواصفات العامة لبيانات الاتصال المتحركة	Tractors And Machinery For Agriculture And Forestry -- Serial Control And Communications Data Network -- Part 1: General Standard For Mobile Data Communication	SASO ISO 11783-1
84		الجرارات والآلات للزراعة والغابات- التحكم التسلسلي وبيانات شبكة الاتصال -الجزء الثاني: الطبقة الطبيعية	Tractors And Machinery For Agriculture And Forestry -- Serial Control And Communications Data Network -- Part 2: Physical Layer	SASO ISO 11783-2

85		الجرارات والآلات للزراعة والغابات- التحكم التسلسلي وبيانات شبكة الاتصال- الجزء الرابع: طبقة الشبكة	Tractors And Machinery For Agriculture And Forestry -- Serial Control And Communications Data Network -- Part 4: Network Layer	SASO ISO 11783-4
86		الجرارات والآلات للزراعة والغابات- التحكم التسلسلي وبيانات شبكة الاتصال -الجزء الخامس: إدارة الشبكة	Tractors And Machinery For Agriculture And Forestry -- Serial Control And Communications Data Network -- Part 5: Network Management	SASO ISO 11783-5
87		الجرارات والآلات للزراعة والغابات- التحكم التسلسلي وبيانات شبكة الاتصال -الجزء السادس: الطرفية الفعلية	Tractors And Machinery For Agriculture And Forestry -- Serial Control And Communications Data Network -- Part 6: Virtual Terminal	SASO ISO 11783-6
88		الجرارات الزراعية ذات العجلات- متطلبات القيادة	Agricultural Wheeled Tractors -- Steering Requirements	SASO ISO 10998
89		آلات الزراعية والغابات التوافق- الكهرومغناطيسي طرق الاختبار- ومعايير القبول	Agricultural And Forestry Machinery -- Electromagnetic Compatibility -- Test Methods And Acceptance Criteria	SASO ISO 14982
90		الجرارات والآلات للزراعة والغابات- محور تثبيت الأبعاد للعجلة	Tractors And Machinery For Agriculture And Forestry -- Wheel-To-Hub Fixing Dimensions	SASO ISO 5711
91		الجرارات والآلات الزراعية رموز- التحكم لخدمة القدرة الهيدروليكية	Agricultural Tractors And Machinery -- Coding Of Remote Hydraulic Power Services And Controls	SASO ISO 11471
92		الجرارات الزراعية ذات العجلات– السرعة القصوى طريقة التصميم	Agricultural Wheeled Tractors - Maximum Speeds - Method Of Determination	SASO ISO 2965
93		الجرارات الزراعية- الأسطوانات الهيدروليكية التحكم عن بعد للمعدات المجرورة	Agricultural Tractors - Remote Control Hydraulic Cylinders For Trailed Implements	SASO ISO 2057
94		الجرارات الزراعية- مكان مقعد المشغل - الأبعاد	Agricultural Tractors - Operator's Seating Accommodation - Dimensions	SASO ISO 4253
95		الجرارات والآلات للزراعة والغابات– الربط الهيدروليكي دائرة الكبح	Tractors And Machinery For Agriculture And Forestry - Hydraulic Coupling - Braking Circuit	SASO ISO 5676

96		الجرارات والآلات للزراعة والغابات– خوابير الربط والخوابير الزنبركية – المتطلبات والأبعاد	Tractors And Machinery For Agriculture And Forestry - Linch Pins And Spring Pins - Dimensions And Requirements	SASO ISO 7072
97		الجرارات للزراعة والغابات- الزيادات والثقوب للتحكم بالمعدات الخارجية	Tractors For Agriculture And Forestry - Mountings And Apertures For External Equipment Controls	SASO ISO 8935
98		الآلات الزّراعيّة - الأمان – الجزء الخامس: الماكينات الألية المدفوعة	Agricultural Machinery -- Safety -- Part 5: Power-Driven Soil-Working Machines	SASO ISO 4254-5
99		الجرارات والآلات للزراعة والغابات - موصل إرسال القوة الإضافي لمحطة العامل.	Tractors And Machinery For Agriculture And Forestry -- Auxiliary-Power-Transmission Connector For The Operator Station	SASO ISO 17612
100		الجرارات الزراعية ذات العجل والحوامل- الأحمال الأمامية- مرفقات خلفية	Agricultural Wheeled Tractors And Attachments -- Front Loaders -- Carriages For Attachments	SASO ISO 23206
101		الجرارات، الآلات للزراعة والغابات، معدات الحدائق- أدلة العامل- المحتوى وتقديم	Tractors, Machinery For Agriculture And Forestry, Powered Lawn And Garden Equipment -- Operator's Manuals -- Content And Presentation	SASO ISO 3600
102		الجرارات والآلات للزراعة والغابات ومعدات الحدائق- رموز التحكم للعامل والعروض الأخرى-جزء ١: الرّموز المعروفة	Tractors, Machinery For Agriculture And Forestry, Powered Lawn And Garden Equipment -- Symbols For Operator Controls And Other Displays -- Part 1: Common Symbols	SASO ISO 3767-1
103		الجرارات، الآلات للزراعة والغابات ومعدات الحدائق- رموز التحكم للعامل والعروض الأخرى- جزء ٢: الرّموز للآلات و الجرارات الزراعية	Tractors, Machinery For Agriculture And Forestry, Powered Lawn And Garden Equipment -- Symbols For Operator Controls And Other Displays -- Part 2: Symbols For Agricultural Tractors And Machinery	SASO ISO 3767-2
104		الجرارات والآلات للزراعة والغابات- التحكم التسلسلي وشبكة بيانات الاتصال -الجزء السابع: تنفيذ طبقة تطبيق الرسائل	Tractors And Machinery For Agriculture And Forestry -- Serial Control And Communications Data Network -- Part 7: Implement Messages Application Layer	SASO ISO 11783-7

105		الجرارات والآلات للزراعة والغابات- التحكم التسلسلي وشبكة بيانات الاتصال - الجزء الثامن: الرسائل التسلسلية الآلية	Tractors And Machinery For Agriculture And Forestry -- Serial Control And Communications Data Network -- Part 8: Power Train Messages	SASO ISO 11783-8
106		الجرارات والآلات للزراعة والغابات- التحكم التسلسلي وشبكة بيانات الاتصال - الجزء التاسع: جرار ECU	Tractors And Machinery For Agriculture And Forestry -- Serial Control And Communications Data Network -- Part 9: Tractor ECU	SASO ISO 11783-9
107		الجرارات والآلات للزراعة والغابات- التحكم التسلسلي وشبكة بيانات الاتصال - الجزء الحادي عشر: قاموس مقوم البيانات المتحركة	Tractors And Machinery For Agriculture And Forestry -- Serial Control And Communications Data Network -- Part 11: Mobile Data Element Dictionary	SASO ISO 11783-11
108		الجرارات والآلات للزراعة والغابات- التحكم التسلسلي وشبكة بيانات الاتصال - الجزء الثالث عشر: خادم الملف	Tractors And Machinery For Agriculture And Forestry -- Serial Control And Communications Data Network -- Part 13: File Server	SASO ISO 11783-13
109		الجرارات الزراعية- المتطلبات اللازمة للتوجيه	Agricultural Tractors -- Requirements For Steering	SASO ISO 13598
110		الجرارات والآلات للزراعة والغابات- التحكم التسلسلي وشبكة بيانات الاتصال - الجزء الثاني عشر: خدمات علامات التمييز	Tractors And Machinery For Agriculture And Forestry -- Serial Control And Communications Data Network -- Part 12: Diagnostics Services	SASO ISO 11783-12
111		الجرارات الزراعية- الضغط الهيدروليكي للمعدات الزراعية .	Agricultural Tractors -- Hydraulic Pressure For Implements	SASO GSO ISO 10448
112		الجرارات والآلات للزراعة والغابات– الوسائل التقنية لضمان السلامة – الجزء ٧: الحصادات الدراسات حصادات العلف والقطن	Tractors And Machinery For Agricultural And Forestry - Technical Means For Ensuring Safety - Part 7: Combine Harvesters, Forage And Cotton Harvesters.	SASO ISO 4254-7
113		معدات الري الزراعية – السلامة – الجزء ٨: موزعي الأسمدة الصلبة	Agricultural Machinery - Safety – Part 8: Solid Fertilizer Distributors	SASO-ISO-4254-8
114		الآلات الزراعية – السلامة – الجزء ٩: آلات البذر	Agricultural Machinery - Safety – Part 9: Seed Drills	SASO-ISO-4254-9

115		معدات الحصاد- الحصادات المركبة - التصميم والتسمية لسعة خزان الحبوب وتفريغ جهاز الأداء	Equipment For Harvesting - Combine Harvesters - Determination And Designation Of Grain Tank Capacity And Unloading Device Performance	SASO ISO 5687
116		معدات الحصاد - الحصادات المركبة - الشروط المعادلة لأجزاء العناصر	Equipment For Harvesting - Combine Harvester - Component Parts Equivalent Terms	SASO ISO 5702
117		معدات الحصاد - الأبعاد المناسبة لآلة حصاد العلف	Equipment For Harvesting - Dimensional Compatibility Of Forage Harvesting Machinery	SASO ISO 5715
118		معدات الحصاد- الشفرات للمحشات الدوارة الزراعية - المتطلبات	Harvesting Equipment - Blades For Agricultural Rotary Mowers - Requirements.	SASOISO 5718
119		معدات الحصاد - العناصر الموحدة والوظيفية – جزء ١: المصطلحات	Equipment For Harvesting -- Combines And Functional Components -- Part 1: Vocabulary	SASO ISO 6689-1
120		معدات الحصاد - العناصر الموحدة والوظيفية –جزء ٢: تقييم الأداء والخصائص التي تم	Equipment For Harvesting -- Combines And Functional Components -- Part 2: Assessment Of Characteristics And Performance Defined In Vocabulary	SASO ISO 6689-2
121		معدات الحصاد والحفظ - صناعة الرزم المستديرة - المصطلحات والمواصفات التجارية	Equipment For Harvesting And Conservation -- Round Balers -- Terminology And Commercial Specifications	SASO ISO 11450
122	Drilling Machinery And Equipment	معدات حفر الصخور- الجذوع المتكاملة	Rock Drilling Equipment -- Integral Stems	SASO-ISO-721
123		معدات حفر الصخور - قضبان الحفر المجوفة المستديرة والسداسية	Rock Drilling Equipment -- Hollow Drill Steels In Bar Form, Hexagonal And Round	SASO-ISO-722
124		معدات حفر الصخور - السيقان المطوقة المشكلة بالطرق والجلب الظرفية المناظرة لها لقضبان الحفر المجوفة السداسية	Rock Drilling Equipment -- Forged Collared Shanks And Corresponding Chuck Bushings For Hollow Hexagonal Drill Steels	SASO-ISO-723
125		معدات حفر الصخور - معدات الحفر من الفولاذ القلوظة المحززة للحفر بالطرق، (المقاسات الاسمية) 22 مم إلى 38مم	Rock Drilling Equipment -- Rope Threaded Drill Steel Equipment For Percussive Drilling, Nominal Sizes 22 Mm To 38 Mm	SASO-ISO-10207
126		معدات حفر الصخور - قلوظة محززة من ناحية اليسار	Rock Drilling Equipment -- Left-Hand Rope Threads	SASO-ISO-10208

127		حفر الصخور - قضبان الحفر الدوارة ومثاقيب الحفر الدوارة للحفر الجاف - أبعاد التوصيل	Rock Drilling -- Rotary Drill-Rods And Rotary Drill-Bits For Dry Drilling -- Connecting Dimensions	SASO-ISO-1717
128		معدات حفر الصخور - قضبان الحفر بوصلة مخروطية الطرف للحفر بالطرق	Rock Drilling Equipment -- Drill Rods With Tapered Connection For Percussive Drilling	SASO-ISO-1718
129		حفر الصخور - الحفر الممتد – معدات الفولاذ لحفر الحفر العميقة بالطرق - وعكس الاتجاه والدعم والمعدات المقلوظة 1 1 / 4بوصة 1 1 / 16 بوصة (٢٧ و٣٢ مم)	Rock Drilling -- Extension Drill-Steel Equipment For Percussive Long-Hole Drilling -- Reverse-Buttress-Threaded Equipments 1 1/16 And 1 1/4 In (27 And 32 Mm)	SASO-ISO-1721
130		حفر الصخور - الحفر الممتد – معدات الفولاذ لحفر الحفر العميقة بالطرق - عكس الاتجاه والدعم والمعدات المقلوظة 1 1 / 2بوصة 2 1 / 2 بوصة (٣٨ و٦٤ مم)	Rock Drilling -- Extension Drill-Steel Equipment For Percussive Long-Hole Drilling -- Reverse-Buttress-Threaded Equipments 1 1/2 To 2 1/2 In (38 To 64 Mm)	SASO-ISO-1722
131	Lead-Acid Batteries	بطاريات الرصاص الحمضية لبدء التشغيل – الجزء ١ : المتطلبات العامة وطرائق الاختبار	Lead-Acid Starter Batteries-Part 1: General Requirements And Methods Of Test	SASO IEC 60095-1
132		بطاريات الرصاص الحمضية المستخدمة لبدء الحركة - الجزء ٤: أبعاد البطاريات للمركبات الثقيلة	Lead-Acid Starter Batteries – Part 4: Dimensions Of Batteries For Heavy Vehicles	SASO IEC 60095-٤
133		بطاريات الرصاص الحمضية لآلات السحب - الجزء ١: المتطلبات العامة وطرق الاختبارات	Lead-Acid Traction Batteries – Part 1: General Requirements And Methods Of Tests	SASO-IEC-60254-1
134		بطاريات الرصاص الحمضية لآلات السحب - الجزء ٢: أبعاد الخلايا والأطراف ووسم القطبية على الخلايا	Lead-Acid Traction Batteries – Part 2: Dimensions Of Cells And Terminals And Marking Of Polarity On Cells	SASO-IEC-60254-2
135	Secondary Cells And Batteries	البطاريات والخلايا الثانوية المحتوية على مواد قلوية أو اليكتروليتات غير حمضية أخرى - متطلبات السلامة لخلايا وبطاريات الليثيوم الثانوية ، لاستخدامها في التطبيقات الصناعية	Secondary Cells And Batteries Containing Alkaline Or Other Non-Acid Electrolytes - Safety Requirements For Secondary Lithium Cells And Batteries, For Use In Industrial Applications	IEC 62619:2017

136	Road Construction Machinery – Paving And Milling Machinery	الآلات المتنقلة لإنشاء الطرق – السلامة – الجزء ١: المتطلبات العامة	Mobile Road Construction Machinery - Safety - Part 1: Common Requirements	SASO GSO EN 500-1
137		الآلات المتنقلة لإنشاء الطرق – السلامة – الجزء ٢: المتطلبات الخاصة لآلات كشط الطرق	Mobile Road Construction Machinery - Safety - Part 2: Specific Requirements For Road-Milling Machine	SASO GSO EN 500-2
138		الآلات المتنقلة لإنشاء الطرق – السلامة – الجزء ٣: المتطلبات الخاصة لآلات تثبيت التربة وآلات إعادة التدوير	Mobile Road Construction Machinery - Safety - Part 3: Specific Requirements For Soil-Stabilizing Machines And Recycling Machines	SASO GSO EN 500-3
139		الآلات المتنقلة لإنشاء الطرق – السلامة – الجزء ٦: المتطلبات الخاصة لأجهزة تشطيب الرصف	Mobile Road Construction Machinery - Safety - Part 6: Specific Requirements For Paver-Finishers	SASO GSO EN 500-6

Note: The list of standards mentioned in this Annex is subject to review, and suppliers are responsible for ensuring that they use the latest standards through SASO's website.

B) List of Products and Customs Coding

No.	Product	Customs Coding
1	Automated Devices For Spraying, Dispersing Or Spewing Liquids Or Powders	8424
	Steam Or Sand Blasting Machines	
	Jet Spraying Machines	
	Insecticide Spraying Appliances	
2	Bulldozers And Angledozers	8429
	Grading And Leveling Machinery (Scrapers)	
	Power Shovels	
	Extraction Machinery And Shovel Loaders	
	Loaders And Front-End Shovel Loaders, With Chains	
	Self-Propelled Road Rollers And Tamping Machines	
	Machinery With A 360° Rotating Superstructure	
3	Self-Propelled Machinery And Devices, Stitching Or Stripping Machinery	8430
	Machinery And Other Devices; For Moving, Smoothing, Leveling, Scraping, Drilling Or Ramming, Agglomeration, Prospecting And Extraction Of Soil, Mineral Ores, Or Metals	
	Coal Or Rock Crushing Machinery	
	Snow Sweepers And Blowers	
	Tunnel Boring Machinery	
4	Parts Exclusively Or Primarily Intended For Use With Machinery	8431
	Buckets, Shovels, Hooks, Grabbers, Bulldozer Blades, Levelling Bulldozers	
	Well Drills	

5	Plows	8432
	Disk Soil Crushing Machines	
	Tillage Machinery	
	Soil Smoothing Machinery	
	Weeding Machinery	
	Direct Seeding Machinery Without Tillage Tools	
	Direct Planting Machinery Without Tillage Tools	
	Direct Seedling Machinery Without Tillage Tools	
	Seeding Machinery	
	Planting Machinery	
	Seedling Machinery	
	Organic Fertilizer Brushing Machinery	
	Fertilizer Dispensers	
	Land Purification Machines From Stones	
	Soil Loosening Machinery For Planting	
	Plant Pruning Machinery; Blades, Disks, Cylinders, Teeth	
6	Powered, With The Cutting Device Rotating In A Horizontal Plane, Mowers	8433
	Cutter Rods For Tractor Mounting	
	Haymaking Machinery	
	Straw Or Fodder Balers	
	Combine Harvester-Threshers	

	Root Or Tuber Harvesting Machines	
	Straw Or Fodder Pick-Up Balers	
	Automatic Lifting Fittings	
	Rotary Connecting Rods	
	Bale Lifting Tools	
	Automatic Fittings For Packages	
	Cutting Blades, Teeth, Combs, Thorns, Cylinders	
7	Self-Contained Function Machinery And Automatic Devices	8479
	Machinery And Equipment For Public Works Or Buildings And The Like	
	Surface Levelling Machinery Used For Road Construction	
	Gravel Spraying Machinery	
	Asphalt Spraying Machinery	
	Road Traffic Sign Planning Devices (Other Than Jet-Powered)	
	Rotary Sweepers For Cleaning Streets And Squares Installed On A Waste Bin And Water Spraying Kit (Without The Car)	
	Industrial Floor Polishers	

Note: The products and customs tariffs (HS Codes) found in Saber electronic platform are considered the updated and approved version.

Annex (2)

General Basic Requirements for Health and Safety in Machinery

1 Basic Health and Safety Requirements

1/1 Integration Principles of Safety

A) Machinery shall be designed and manufactured in such a way that they are installed and prepared for use, operation, modification and maintenance without exposing persons to hazard, when performing such operations under the conditions of anticipated use, taking into account the occurrence of any misuse reasonably foreseen.

The purpose of these precautions is to eliminate any risks during the operating life of the machinery, including the transportation, assembly, disassembly and disposal stages.

B) The supplier - when choosing the most appropriate method - shall work on applying the principles below, in the following order:

– Preventing or reducing the risks as much as possible (not tampering with the design or installation of the machinery).

– Taking the necessary precautions regarding risks that cannot be eliminated.

– Educating users about the risks that are still exist (despite taking preventive precautions) resulting from any deficiencies in the approved protection measures, clarifying the quality of training required, as well as defining requirements for providing personal protection from equipment.

C) When designing and installing machinery and when formulating instructions, the supplier shall be careful in the intended use of them, as well as in any misuse that can be reasonably expected.

The machinery shall be designed and manufactured in a way that prevents unnatural use if such use would result in a hazard, whenever appropriate, and instructions shall be directed so that the user's attention can be given to the methods of using the machinery according to the experience gained.

D) The machinery shall be designed and manufactured taking into account the constraints encountered by the operator as a result of the reasonable or expected use of personal protective equipment (PPE).

E) Machinery shall be provided with all necessary equipment and accessories to enable them to be modified, maintained and used safely.

1/2 Materials and Products

The materials or products used in the manufacture of machinery or manufactured during the use of the machinery shall not endanger the health and safety of persons, especially when using liquids, and care shall be taken - when manufacturing and

installing the machinery - to avoid the risks of exposure due to the packing, use, repair or disposal of their waste.

1/3 Lighting

The machinery shall be provided with integrated lighting suitable for the respective operations, as their absence may lead to exposure to hazards despite the presence of natural lighting surrounding the machinery.

The machinery shall be designed and installed in such a way that they do not cause eye inconvenience resulting from turning on and off the lighting, while making sure that there are no dangerous side effects on moving parts due to poor lighting.

As for interior parts that need frequent inspection or adjustment, or maintenance, appropriate lighting shall be provided.

1/4 Design of machinery to facilitate handling

1/4/1 The machinery or any parts of their components shall have the following characteristics:

A) The ability to be handled and transported safely.

B) They shall be packaged and designed in a manner that they can be stored safely without damaging their components.

2/4/1 When transporting the machinery or any part of their components, there shall be no possibility of any sudden movement or risks due to instability, as long as dealing with the machinery or any part of their components is in accordance with the instructions. As for the cases in which the weight, size, shape or various components of the machinery prevent them from being moved manually, the machinery or any parts of their components shall meet the following requirements:

A) To be equipped with lifting accessories.

B) To be designed in a manner that allows them to be fitted with these accessories.

C) To be prepared/equipped to mount a lifting device so that they can be lifted easily.

1/4/3 When transporting machinery or any of their parts manually, the following shall be taken into consideration:

A) To be easily movable.

B) To be equipped for lifting and moving safely.

Special arrangements shall also be made to handle potentially dangerous tools or machine parts, even if they are lightweight.

1/5 Working Environment

The physical stress facing the operator shall - under the specified conditions of use - be minimized as possible, taking into account the provision of comfortable environmental conditions such as:

A) Allowing the operator to change the dimensions, strength and durability of the machine.

B) Providing enough space for easy movement of the operator.

C) Not to exceed the specified rate of work for the machinery.

D) Avoiding the increase of the operator's control operations of the machine, especially those requiring prolonged focus.

E) Modifying the machine user interface in line with the nature of the operators.

1/6 Operating Positions

If the purpose of these machinery is to be used in an environment that represents a source of risk to the health and safety of the operator, or if the machinery themselves represent a source of hazard, adequate means shall be provided to ensure good working conditions for the operator against any foreseeable risks. And the operating position shall be equipped with an appropriate cabin designed or equipped to fulfill the requirements mentioned in Clause (1/5) above, whenever appropriate. It is also necessary for the exit point of the cabin to enable quickly evacuation, and moreover, an emergency exit shall be provided in a direction other than the usual exit direction; as for moving machinery, they shall also return to the workplace.

1/7 Seats

Work positions (places) form an integral part of the machine, and these positions shall be designed in such a way that the seat is attached to the machine, whenever the working conditions permit.

The seat shall give the operator a stable and comfortable position, and moreover, the seat shall be convenient and close to the controllers, in order to control the work easily.

If the machinery are subject to vibration, the seat shall be designed and installed in a way that reduces the vibration transmitted to the operator reasonably to the lowest possible degree, and the seat shall be designed to withstand all operational stresses that the operator may be exposed to. When there is no floor under the operator's feet, a footrest covered with anti-slip material shall be provided.

2 Control Systems

2/1 Control Devices

2/1/1 Controllers shall be:

A) clearly visible and recognizable, using pictograms whenever possible.

B) placed in locations that allow them to be operated safely without hesitation or wasting time, and without the possibility of confusion.

C) designed in a way that makes its movement consistent with its function.

D) placed outside the area of danger, except in cases of necessity for some controllers such as the presence of the start or stop switch, in case of emergency.

E) placed in safe locations so as not to pose additional risks.

F) protected and designed for use in situations of hazard and emergency, so that they can be operated with a specified procedure.

G) manufactured in such a way as to withstand the expected operational forces, and special attention shall be paid to emergency stop devices that may also be subject to significant operational forces.

2/1/2 In cases where controllers are designed and installed to implement multiple procedures, especially those cases in which there is no communication between one person and another, the procedure to be followed shall be clearly written when necessary.

2/1/3 Controllers shall be arranged in such a way that their coordination, mode of transmission and resistance to operation comply with the procedure to be performed, taking into account environmental conditions.

2/1/4 The machinery shall be provided with the indicators required for safe operation, and the operator shall be able to read them from the control position.

2/1/5 The operator shall ensure that no person is present in the hazard zone in all control locations, in addition to the necessity to design the control system in a way that prevents it from starting when there is no person within the hazard area. And when it is not possible to implement any of these measures, the control system shall give an audio or visual alarm, or both, before starting up the machinery, with adequate time being given for the persons exposed to the hazard in order to leave the danger area or prevent the operation of the machinery.

2/1/6 If necessary, means shall be provided to ensure that the machinery are only controlled from the control positions, which are located in one place or several pre-defined places, and when there is more than one control position, the control system shall be designed in such a way that the use of one position precludes the use of other positions, with the exception of the controls in cases of stop or emergency stop (due to an emergency).

2/1/7 When the machine can be operated by two or more operating positions, each position shall be equipped with all required controllers, without the operators hindering each other's work or endangering others.

2/2 Start Up

The operation of the machinery shall be started up by means of intended operation (only at the decision and will of the operator), and that is through the controller equipped for this purpose.

This same condition applies in the following cases:

A) Restarting the machinery after stopping for whatever reason.

B) A major change in operating conditions.

In spite of this, machinery can be restarted or changes in operating conditions may be made with the intended operation of another device, other than the controller specially designed for this purpose, provided that this does not lead to the occurrence of a hazardous situation.

For machinery operating in automatic mode, it may be possible to start or restart the machinery after they have been stopped or to make a change in operating conditions without human intervention, provided that this does not lead to any hazardous situation.

And when the machinery contain many controllers specialized in starting operation, and hence the possibility of exposing some operators to hazard, additional devices shall be installed to eliminate these risks, and if safety requirements require starting or stopping the operation in a specified sequence, there shall be devices ensuring that these processes are applied in the correct order.

2/3 Shutdown

2/3/1 Normal Shutdown

A) The machinery shall be equipped with a controller that enables them to move to a full stop mode safely.

B) Each workplace shall be equipped with a controller to stop some or all of the machinery functions, based on the risks involved, until the machinery are safely operated.

C) Start-up controllers shall have priority over controllers related to shutting down machinery..

D) The interruption of the power supply to the operators concerned shall be automatic as soon as the machinery or their hazardous functions cease to function.

E) The throttle controller shall be used - for operational reasons - without cutting the power supply to the actuators, and the shutdown case shall be monitored and maintained.

2/3/2 Stopping in the case of emergency

A) The machinery shall be equipped with one or more emergency stopping devices, in order to avoid actual or imminent hazard.

B) The following are excluded from this:

1) Machinery in which the emergency stopping device does not reduce the size of the hazard, either because it does not reduce the downtime, or because it does not activate the necessary precautions to deal with the risks.

2) Moving Machinery and Heavy Duty Equipment.

C) The stopping device shall be:

3) clearly visible, easy to be found, and quickly accessible.

4) able to stop the dangerous operation as quickly as possible, without causing additional risks.

5) able to trigger or allow some preventive vibration, whenever necessary.

D) Once the emergency stopping device is activated after receiving the stop command, this command shall be supported by interlocking the emergency stop device so that this interlocking is specifically bypassed.

E) The device shall not be interlocked without operating the stop command, so that the device can only be disengaged with proper operation, and disengaging the device shall not restart the machine, but only allow a restart.

F) The emergency stopping function shall be available and operating at all times, regardless of the operation mode.

G) Emergency stopping devices shall support other protection measures, without being a substitute for them.

2/4 Assembly of Machinery

When machinery or parts thereof are designed to work together, they shall be designed in a way that includes stop-start controls, including emergency controllers, and they shall have the ability to stop the operation of machinery and all related equipment, especially if continued operation is dangerous.

2/5 Choosing the control or operation modes

2/5/1 The specified control or operation mode shall cancel all other control or operation modes, except for the emergency stop.

2/5/2 If the machinery are designed and installed in a way that allows them to be used in variable conditions of control or operation, which requires the activation of preventive measures or different operating procedures, these machinery shall be equipped with a position limiter that can be locked in all positions, and all position limiters shall be clear and compatible with a single operation or control mode.

2/5/3 The limiter can be replaced by another limiting method, which restricts the use of certain functions in machinery for certain groups of operators.

2/5/4 The machinery - in some operating cases - shall be qualified to operate even if the protective device is removed or disabled, and the operating limiter or control mode shall be able to do the following simultaneously:

A) Disable all other control or operation modes.

B) The possibility of operating hazardous functions only by controllers that require sustainable measures.

C) The possibility of operating hazardous functions only in situations of low hazard, while preventing the severe consequences of the risks.

D) Preventing the operation of any dangerous functions through intended or unintended operating procedures by the sensors of the machinery.

2/5/5 If the above four conditions are not met at the same time, the limiter of control or operation mode shall activate other protective measures designed to ensure a safe range of intervention, and in addition, the operator shall be able to control the operation of the parts he is working on from the adjustment point.

2/6 Power Supply Failure

2/6/1 The power failure or its reconnection after an outage, or the occurrence of fluctuation in the electrical current, shall not lead to the occurrence of dangerous situations.

2/6/2 Special attention shall be paid to:

A) Prohibition of sudden starting up of machinery.

B) Not to change the properties of the machinery in a random way that leads to dangerous situations (accidents) or situations that constitute a hazard.

C) Prohibition of stopping machinery when a stop order is given.

D) Being careful not to drop or blow off moving parts of the machinery.

E) Not hindering the automatic or manual stopping of the moving parts of any kind.

F) Protection devices remain fully functional or capable of issuing a stop order.

3 Prevention of Mechanical Hazards

3/1 Risk of losing stability

The machinery and their components and installations shall be sufficiently stable to avoid the risk of capsizing, falling or accidental (unintended) movement during transportation, assembly, disassembly, or any other work related to the operation of the machinery.

If the shape or correct installation of the machinery does not provide sufficient stability, appropriate means of fixation shall be provided and indicated in the instruction manual.

3/2 Hazard of dismantling during operation

3/2/1 The parts of machinery and their various connections shall be equipped in a way that allows them to withstand the pressures imposed upon them when they are used.

3/2/2 The durability of the materials used shall be commensurate with the nature of the expected work environment, especially when signs of wear, aging, corrosion or friction appear.

3/2/3 The instructions shall indicate the type and frequency of inspections and maintenance required for safety purposes, and the instructions shall indicate - when necessary - the parts subject to wear and the standards limiting their replacement.

3/2/4 In cases where there is a risk of some parts of the machine being separated or disassembled despite taking safety measures, the concerned parts shall be fixed, placed or protected in a way that allows the shrapnel to be contained to avoid dangerous situations.

3/2/5 Both rigid and flexible pipes that transport liquids - especially those are under high pressure - shall be able to withstand potential internal and external stresses, and they shall be protected and secured by force to ensure that there are no risks due to use.

3/2/6 When processing materials are fed to the machine automatically, the conditions below shall be met, in order to avoid exposing people to hazard:

A) When there is a contact between the workpiece and the machine, the machine shall be in its normal condition and operable.

B) When starting or stopping the machine (intentionally or by mistake), there shall be consistency between the feeding motion and the movement of the machine.

3/3 Risks resulting from falling or flying objects

Precautions shall be taken to prevent risks resulting from falling or flying objects.

3/3/1 Risks related to surfaces, edges or corners

The parts of the device - which can be accessed - shall not have sharp edges or corners, or rough surfaces, which may cause injuries, to the extent that the objectives of use allow.

3/3/2 Risks related to installed machinery

The machinery shall be designed and installed in a way that enables the use of each element separately, without the need to use other elements, which may pose a danger to their users, when the machinery are used for the purpose of carrying out various operations that require the removal of the existing workpiece, between a process and another manually, which requires the ability to start up or stop any element of the unprotected elements separately.

3/3/3 Risks related to changing operation conditions

When machinery perform operations in various conditions, they shall be designed, manufactured, configured, and installed in such a way through which these conditions can be created and modified safely and reliably.

3/3/4 Risks related to moving parts

The moving parts of the machine shall be designed and installed in such a way as to prevent the risk of contact that could lead to accidents, or be equipped with protective devices.

All necessary steps shall be taken to prevent the involuntary failure of the moving parts of the machine participating in the work, and when there is a possibility of failure - despite the necessary precautions being taken - specific (appropriate) protection devices and tools shall be provided if possible, in order to prevent the equipment from failing safely.

The instructions and markings affixed to the machinery shall explain what appropriate protective devices are and how to use them.

3/3/5 Type of protection against risks caused by moving parts

Protectors or protective devices which protect against risks arising from operating moving parts shall be selected according to the type of risks, and the instructions below shall be used to help in the choice.

Protective devices designed to protect personnel against risks arising from the moving parts of the working machine shall have the following:

1) Either they are in accordance with the fixed protectors mentioned in clause 4/2/1 below;

2) Or they are in accordance with the (closed) moving protectors mentioned in clause 4/2/2 below.

However, moving (closed) protectors shall be used when repeated entry is assumed.

3/3/6 Transferring parts connected to the process

Protectors or protective devices - designed to protect individuals against hazards resulting from moving parts connected to the process - shall be one of the following options:

A) Either they are in accordance with the fixed protectors mentioned in clause 4/2/1 below;

B) in accordance with the movable interlocking protectors mentioned in clause 4/2/2 below;

C) in accordance with the operator protection devices mentioned in clause 4/2/2 below;

D) Or a combination of the options above.

In the event that it is not possible to fully access some of the moving parts connected to the operation due to the need for operator intervention in the operations, those parts shall be provided with the following:

A) Locked fixed or moving protective devices that prevent access to moving parts connected to operation that were not used during work.

B) Fenders that are adjustable as mentioned in Clause 4/2/2 below, in order to prevent access to the moving parts connected to the moving operation when it is wanted to access them.

3/3/7 Risks of uncontrolled movements

When stopping any part of the machine, the machine shall stop completely, and this shall not pose any hazard.

4 Properties required for protective and preventive devices

1/4 General Requirements

1/1/4 The protectors and protective devices shall have the following characteristics:

A) With solid structure.

B) Securely installed.

C) Do not lead to any additional risks.

D) Not to be ignored or not to operate easily.

E) To be placed at a sufficient distance from the hazard area.

F) Not hindering production processes.

G) Enable basic work in connection with installing or replacing tools and carrying out maintenance work by restricting access exclusively to the area of operations execution without the need to remove the device or disable the protection device, whenever possible.

4/1/2 The protective devices shall work - whenever possible - on protecting against flying or falling objects or materials, as well as protection from emissions resulting from operating machinery.

4/2 Requirements for special protective devices

2/4/1 Fixed protective devices

A) Fixed protective devices are covers that prevent access to parts of hazardous equipment that can be removed during normal operation, cleaning or maintenance work, and both covers and other parts - which the operator, manufacturer or specialist can remove as part of his primary work on machinery - are part of the equipment structure, but not considered protective devices.

B) It shall be ensured that fixed protective devices are installed with systems that can be opened or removed with special tools only.

C) Fixing systems shall remain connected to the protective devices or machinery when removing the protective devices whenever possible.

D) Whenever possible, the protective devices shall not be stabilized in their place without their fixation devices.

4/2/2 Interlocked movable barriers

A) Interlocked movable barriers shall:

1) When opened, remain connected to the machinery whenever possible.

2) Be designed and installed in a way that can only be modified by an approved procedure.

3) The interlocked movable protective devices shall be connected to an interlocking device that ensures:

- Preventing dangerous machine functions from starting until protective devices are turned off.
- Issuing a stop order when the protective devices are not closed.

B) Whenever the operator is able to reach the hazard area before the hazardous functions are stopped, the movable protectors shall be connected to the protective device locking apparatus, in addition to the interlocking device that:

- Preventing the start of dangerous machinery functions until the protective device is closed and sealed.
- Maintaining the protective device closed until the risk of injury resulting from the dangerous functions of the machine is eliminated.

C) Moving protective devices shall be designed in such a way as to prevent the starting or stopping of the machine's functions when one of its components is lost or damaged.

4/2/3 Adjustable protective devices that restrict access

Adjustable protective devices that restrict access to those positions of moving parts necessary for work shall be:

A) manually or automatically adjustable according to the type of work.

B) quickly adjustable without using tools.

4/2/4 Special requirements for protective devices

A) The protective devices shall be designed and integrated with the control system in a manner that allows the following:

1) Moving parts cannot be operated while the operator can access them.

2) People do not have access to the moving parts while those parts are still moving.

3) Preventing the starting or stopping of dangerous functions of the machine when one of its components is lost or broken.

B) The adjustable protective devices shall be modified by a specified procedure.

5 Risks arising from other accidents

5/1 Power Supply

A) The machine connected to the electrical current shall be designed, installed and equipped in such a way as to prevent the occurrence of hazards of an electrical nature.

B) The machinery shall meet the safety requirements stipulated in the Technical Regulation for Low Voltage Electrical Equipment and Appliances.

5/2 Static Electricity

Machinery shall be designed and installed in such a way as to prevent or limit the possibility of the accumulation of dangerous electric charges, or be provided with a vacuum system.

5/3 Sources of non-electric power supplies

When a machine is supplied with a source of energy other than electricity, it shall be designed and equipped so that all potential hazards associated with other energy sources can be avoided.

5/4 Errors in installation

5/4/1 Errors - which may occur when installing or re-installing certain parts in the machine - may be a source of hazard, but the occurrence of that due to the way these parts are designed and configured is considered unacceptable, and sufficient instructional information shall be placed on these parts or on their packages, (the same instructional information shall be placed on the moving parts and special boxes in a way that shows movement directions to avoid the occurrence of risks.

5/4/2 The instruction manual shall include - when necessary - extensive information about such risks.

5/4/3 Faulty connections may pose a source of danger, but this is not possible due to the way the machine is designed, and sufficient instructional information shall be placed (installed) on the parts to be connected, as well as on the electrical connection means whenever possible.

5/5 Maximum Temperature

5/5/1 Special precautions shall be taken to prevent the risk of injury resulting from the operator touching or approaching parts of machinery or from materials with high or low temperatures.

5/5/2 Necessary steps shall be taken to avoid the risk of hot or cold scattered materials resulting from machine operation.

5/6 Fires

The machinery shall be designed and installed in a way that helps avoid the hazard of fire, or the hazard of overheating due to the machine itself, or the danger from gases, liquids, dust, vapors or other materials resulting from the use of some machinery.

5/7 Explosions

The machinery shall be designed in such a way as to prevent danger from the explosion of the machinery themselves, or from gases, liquids, dust, vapors, or other substances resulting from operating the machinery or the materials used in them.

The machinery shall meet - whenever there is a risk of explosion as a result of using the machinery - the requirements of the technical regulations and standards related to the design and use of equipment used in explosive atmospheres.

5/8 Noise

5/8/1 The machinery shall be designed and installed in a way that limits (reduces) the risks resulting from noise emissions to the lowest possible level, taking into account the use of advanced technical means, and the provision of means to reduce noise, especially at noise sources.

5/8/2 The level of noise emission can be assessed by reference to the relative emissions data for similar machinery.

5/9 Vibrations

5/9/1 The machinery shall be designed and installed in a way that limits (reduces) the risks resulting from the vibration emitted by them to the lowest level, taking into account the use of technical progress and the provision of means to reduce vibration, especially at the sources of vibration.

5/9/2 The level of vibration emissions can be assessed by reference to the relative emissions data for similar machinery.

5/10 Radiation

5/10/1 Unwanted emissions of radiation shall be prevented or reduced to the lowest possible level, so that they do not adversely affect individuals.

5/10/2 The ionic radiation emissions shall not exceed the minimum level of the machine need during operation and cleaning, and when there is a danger, the necessary precautions shall be applied.

5/10/3 Non-ionizing functional radiation emissions - during operation and cleaning - shall not increase to levels that do not adversely affect the health and safety of individuals.

5/11 Laser Radiation

When using laser equipment, the following shall be observed:

A) The laser equipment in the machinery shall be designed and installed in such a way as to prevent the sudden emission of radiation.

B) The laser equipment in the machinery shall be protected in such a way that the effective radiation and the radiation caused by reflection or diffusion, and the secondary radiation is harmless to health.

C) Optical equipment - intended for monitoring or modifying laser equipment - shall not pose any health risks from the laser.

5/12 Emissions of hazardous substances

5/12/1 The machinery shall be designed and installed in a way that helps avoid inhalation, ingestion, or contact with the skin, eyes, and mucous membranes, or their penetration into the skin.

5/12/2 The machine - in situations of unavoidable danger - shall be equipped in a way that helps contain, empty or precipitate hazardous materials by spraying with water, purifying or otherwise treating with similar effectiveness.

5/12/3 Containment or emptiness devices should be installed in a manner that achieves the maximum effect when the process cannot be fully contained during the normal operation of the machine.

5/13 Hazard of restricting the movement of people inside machinery

Machinery shall be designed, installed, and fixed in such a way that parts of the body are not stuck therein, and if that is not possible, a way to seek help shall be provided.

5/14 Risks of slipping, being trapped or falling

5/14/1 The machinery parts - which people move around or stand on - shall be designed and installed in a way that prevents them from slipping, being trapped or falling off.

5/14/2 These parts shall be equipped - whenever possible - with fixed hand grips that suit the operator or user and enable him to maintain stability.

5/15 Risks of Lightning Bolt

Machinery that need protection from the impact of lightning blot - while using them - shall be equipped with a special system for discharging such electrical charges to the ground.

5/16 Climatic Conditions

Machinery, safety components, and lifting equipment intended for operation, whether in open or non-air-conditioned environments, shall be designed in such a way as to enable them to operate safely in hot and humid conditions.

5/17 Electromagnetic Compatibility Requirements

A) Electromagnetic disturbance caused by machinery, safety components, and lifting equipment shall not exceed a level affecting the operation of radios, wired and wireless telecommunications equipment, or other equipment as required.

B) Machinery, safety components, and lifting equipment shall have fittings to protect against the expected hazard of Electromagnetic disturbance when used, making them work well without unacceptable risks when used for their intended purposes.

6 Maintenance

6/1 Maintenance of Machinery

6/1/1 The areas of adjustment and maintenance shall be located outside the hazardous areas and it must also be possible to carry out adjustment, maintenance, repair and cleaning processes within the time when machinery stop working.

6/1/2 If the implementation of one or more of the aforementioned cases fails for technical reasons, necessary precautions shall be taken to ensure that these processes can be safely executed as indicated in clause 2/5 above.

6/1/3 A malfunction detection device shall be provided and linked to the equipment when dealing with automated machinery or other machinery, in extreme cases.

6/1/4 The components of the automated machinery that need to be changed frequently shall be easily and safely removable and replaceable, provided that these components are changed using the necessary technical means, according to the specified operating method.

6/2 Access to operation modes and service points

Machinery shall be designed and installed in such a way as to allow safe access, adjustment and maintenance of all defective or malfunctioning components during the operation of the machinery.

6/3 Isolation of Energy Sources

6/3/1 machinery shall be provided with special elements to isolate them from all sources of energy, and these insulators shall be clearly identified, and they shall be lockable whenever the reconnection poses a hazard to individuals, and for these insulators to be lockable, whenever the operator is unable - from any area he can access - to ascertain whether or not there is a power outage or not.

6/3/2 If electrical connection to the machine is possible, the operation can be easily stopped by removing the plug, provided that the operator shall verify that the plug is removed.

6/3/3 After the power supply is stopped - it shall be possible to discharge any residual or stored energy into the electrical circuits of the machine without exposing people to any hazard.

6/3/4 Exceptions to the above requirements are some requirements that may remain related to energy sources to be able to install parts, protect the information, illuminate interior parts, etc., In such case, exceptional precautions shall be taken to ensure operator's safety.

6/4 Operator Interference

Machinery shall be designed and equipped in such a way as to allow minimal operator's intervention, and if operator's interference is required, this shall be done easily and safely.

6/5 Cleaning the Internal Parts

The machine shall be designed and installed in a way that ensures that the internal parts containing hazardous materials can be cleaned, and these parts shall be protected from the outside, and if the machine fails to be protected from any foreign materials entering it, it shall be designed and installed in a way that allows it to be cleaned safely.

7 Information

7/1 Information and warnings affixed to the machine

It is preferable to place indicative information and warnings on the machine in the form of symbols or illustrative pictures that are easy to be understood. Any written or verbal information or warnings shall be expressed in Arabic or in languages that are easy for users to understand.

7/1/1 The means of communicating information

A) The necessary information that facilitates the process of controlling the machinery shall be provided in a clear, simple and easy-to-understand manner, and it shall not be too much and not confusing the operator.

B) The visual display units or any other interactive means of communication between the operator and the machine shall be easy to understand and simple.

7/1/2 Warning Devices

A) Machinery shall be equipped with special devices to emit an optical or acoustic signal to warn at the times when the health and safety of persons is endangered due to the faults of operating the unsupervised machinery.

B) When machinery are equipped with warning devices, their signals shall be clear and easy to understand, and the operator shall have the ability to verify the efficiency of operation of all warning devices at all times.

C) The safety colours and signs shall be adhered to in accordance with the relevant standards.

7/1/3 Warning of residual risks

In situations where the risks remain despite the safety precautions inherent in the design have been taken, potential complementary protection precautions shall be followed and necessary warnings made clear, including warning devices.

7/1/4 Marking Machinery

A) All machinery shall be clearly marked in a legible and non-removable manner, and the following minimum standards shall be applied:

1) The trade name and full address of the manufacturer and official representative - if applicable.

2) Naming Machinery.

3) Naming of the model or type.

4) Put the serial number - if any.

5) Put the date of manufacture.

B) It is forbidden to write a date contrary to the date of manufacture when placing it on the machine.

C) Machinery - designed for use in environments exposed to explosions - shall be marked with signs designated for the same.

D) The machinery shall include complete information regarding their type and methods of safe use, and that information is subject to the requirements mentioned in paragraph 7/1 above.

E) When moving machinery or part of them manually during normal use, and the mass of the machine or part is (15) kg, or when it is necessary to move the machine or one of its parts during the use of lifting equipment, the amount of mass shall be clearly and legibly mentioned.

F) Warning labels indicating the grave dangers that still exist (although precautionary precautions have been taken) shall be affixed, in addition to preparing personal protective equipment that shall be worn.

7/1/5 Instruction Manual

To ensure proper installation, use and safe maintenance, an instruction manual for operation shall be attached to all machinery. Instructions shall be written in accordance with the principles referred to below.

A) General principles for formulating instructions

1) The instructions shall be written in Arabic or in English.

2) The instruction manual attached to the machine shall be placed on the front cover in Arabic or in English, and in case there are no "original instructions" in Arabic or English, the manufacturer or supplier shall provide a translated version into the required languages. The translated instructions shall also be placed on the front cover and referred to as "Translation of the instructions from the original language into Arabic or English", and the translation shall be accompanied by all original instructions.

3) In the case of machinery intended for use by non-professional operators, the instructions shall be formulated in a manner that takes into account the general education and level of understanding of the operators.

B) Contents of Instruction Manual

The instruction manual shall contain - whenever necessary - the following minimum information:

1) Trade name and full address of the manufacturer and official representative.

2) Naming the machinery as specified thereon, with the exception of the serial number.

3) The manufacturer's declaration of conformity.

4) General description of the machinery.

5) Drawings, diagrams, illustrations and explanations necessary for the use, maintenance and repair of machinery, as well as verification of proper performance of their functions.

6) Description of the potential workplaces to be operated by potential operators.

7) Description of the intended use of the machinery.

8) Warnings about the methods in which the machinery shall not be used, whenever experiments have shown that the machinery can't be used in the wrong ways.

9) Assembly, installation, and wiring instructions, including diagrams, structural installation methods or machinery fixing means.

10) Instructions for assembly and installation related to reducing noise and vibration.

11) Guidance on the methods of using machinery and, if necessary, instructions for training the operators.

12) Information regarding risks that remain in place despite safety precautions inherent in the design and complementary preventive and protective measures are taken.

13) Guidance on the preventive measures that the user shall take, including personal protective equipment that shall be provided if required.

14) Basic properties of tools that can be used with machinery.

15) Conditions in which machinery meet stability requirements during use, transport, assembly or disassembly, when they are unsuitable for use or testing, or there are foreseeable malfunctions.

16) Instructions to ensure the safe completion of the transportation, processing and storage processes, taking into account the size of the machinery and their various parts, provided that those parts are transported regularly and each separately.

17) The method of operation to be followed in the event of an accident or malfunction, and if a blockage is likely to occur, that method shall include procedures to remove the blockage safely.

18) A description of the maintenance and modification processes that the user shall follow, along with the preventive measures that shall be noted.

19) Guidance on safely performing necessary adjustments and maintenance, including precautions to be taken while performing such processes.

20) Specifications of used spare parts - if they affect the safety and health of the operators.

21) Hearing protective warnings, whenever it is likely that the emission sound pressure level at the operator position is a maximum of (80) or (135) dB, in normal use, a warning shall be provided stating that the operator's exposure to noise depends on the environment in which the equipment is used. It shall be noted that the noise measurement in the normal operating environment is done when any of the equipment starts to use, in order to determine whether hearing protection is required or not. The sound emission level may also be stated if desired by the manufacturer.

22) The machinery may emit non-ionized radiation, which may cause harm to people, especially individuals who have embedded medical devices, whether active or inactive, in addition to information related to the radiation emitted to the operator and persons at risk.

C) Sales Documents

Sales documents describing the machinery shall not conflict with guidance on health and safety aspects, and the documents shall describe the performance features of the machinery that shall contain the same information on vibration and noise emissions as stated in the instruction manual.

Annex (3)

Conformity Assessment Form (Type 1a) as per ISO/IEC 17067

(Type Approval)

1 Type Approval

Type approval is defined as one of the conformity assessment procedures, under which a notified body reviews and verifies the technical design of the product and declares that the technical design meets the requirements of the relevant Saudi Technical Regulations.

Type approval may be conducted by one of the two following methods:

a) Examination of a representative sample of the entire product, that represent the expected production (production model).

b) Assessment of the conformity of the technical design of the product by auditing the relevant technical documentation and manuals (design model), and examining of a representative sample of the expected production for one part or more involving hazardous parts of the product (a combination of the production model and the design model).

2 Procedures of Type Approval

2/1 Submission of a Type Approval Request to a Notified Body

The manufacturer shall submit a request for type approval to a notified body selected by the manufacturer, such request shall include:

a) Name and address of the manufacturer;

b) A written declaration not to submit the same request to any other Notified Body.

c) Technical documentation facilitating the assessment of the conformity of the product to the requirements of Saudi technical regulations. Such documentation shall include adequate analysis and evaluation of risks.

d) Technical documentation shall identify the requirements that apply to the product. Including, as required by the assessment, the design of the product, manufacturing and operation (use) of the product.

e) Technical documentation shall include – at least - the following:

   1) A general description of the product.

   2) Design and manufacturing drawings, horizontal projections (diagrams), components, units, subdivisions, etc.

   3) Description and explanations, referred to therein, necessary to understand the drawings, diagrams, and the operation (use) of the product.

   4) A list of the Saudi standards or any other relevant technical specifications adopted by SASO, whether fully or partially applied, and a description

of the adopted solutions to meet the essential requirements of the Saudi technical regulations in case of non-application of the aforementioned standards. In case of partial application of Saudi standards, the technical documentation shall clarify the applied clauses.

5) Report results (graph calculations) of the design, operation control, conducted tests, etc.

6) Test reports.

7) Representative samples of the planned production. The notified body may request additional samples, if necessary.

8) Evidences (proofs) supporting the appropriateness of the technical solutions applied in the design. Such evidence shall refer to all documents, particularly in case of non-application of the Saudi standards and/or the aforementioned appropriate technical specification. Supporting evidences – as applicable - shall include results of test conducted in the suitable laboratory in the manufacturer or any other laboratory under the responsibility of manufacturer.

2/2 Tasks of the Notified Body

2/2/1 With regard to the product, the notified body shall:

Study the technical documentation and supporting evidence for the purpose of assessment of the technical design of the product.

2/2/2 With regard to the samples, the notified body shall:

1) Ensure that the manufacturing of samples is conformant to the technical documentation, in addition to identifying the elements designed in accordance with the Saudi standards, and the elements designed in accordance with other standards.

2) Carry out appropriate examinations and tests, or outsource them in order to verify that the technical solutions adopted by the manufacturer meet the essential requirements specified in the standards, in case of non-application of the relevant standards.

3) Carry out appropriate tests or outsource them, in order to verify that – in case of non-application of Saudi standards and/or other appropriate standards - the technical solutions adopted by the manufacturer meet the essential requirements of the Saudi technical regulations.

4) Be in agreement with the manufacturer on the venue where tests should be conducted.

2/2/3 As for decisions made by the Notified Body:

1) The notified body shall issue an assessment report of the procedures carried out and their outputs. The notified body shall not publish, fully or partially, the report without the approval of the manufacturer.

2) In case the type meets the requirements of the Saudi technical regulations relevant to the concerned product, the Notified Body shall issue a Type Approval Certificate for the manufacturer. Such certificate shall include the name and address of the manufacturer, test results, the validity conditions thereof, if any, and all information required for identification of the certified type. The certificate may also include attachments.

3) The certificate, along with its attachments, shall include all necessary information required to assess the conformity of manufactured products, according to the tested type and for monitoring during operation.

4) In case the type is non-conforming to the requirements of the Saudi Technical Regulations applicable to the product, the Notified Body shall not issue the Type Approval Certificate and shall notify the applicant of its decision, stating detailed justifications for such decision.

5) The Notified Body shall follow all recognized technological developments. Whenever such developments indicate that the possibility that the certified type may no longer comply with the requirements of the Saudi Technical Regulations, the Notified Body shall determine to what extent further tests are required, and it shall inform the manufacturer accordingly.

6) The manufacturer shall inform the Notified Body, holding the technical documentation related to the Type Approval Certificate, of all modifications of the certified type, which may affect the conformity of the product to the requirements of the Saudi Technical Regulations, or to the terms of validity of the Type Approval Certificate. As such modifications require additional approval other than the primary Type Approval Certificate.

7) Notified bodies shall inform SASO of the Type Approval Certificates and any additions issued or withdrawn, and shall periodically, or upon request, provide a list of the Type Approval Certificates and any additions that has been rejected, suspended, or restricted in any way.

8) Each Notified Body shall inform the other accredited Notified Bodies of the Type Approval Certificates and any additions that has been rejected, suspended, or restricted in any way. In addition, they shall be informed, upon request, about Type Approval Certificates or any additions released.

9) Upon request, SASO and other Notified Bodies can obtain copies of the Type Approval Certificates and/or additions thereto. SASO may obtain copies of technical documentation and testing results carried out by the

Notified Body, upon request. The Notified Body shall keep a copy of the Type Approval Certificate, its annexes and additions, in addition to the technical documentation (including documents attached by the manufacturer) up until the certificate's expiration date.

10) The manufacturer shall keep a copy of the Type Approval Certificate, its annexes and additions thereto, in addition to the technical documentation. Furthermore, the manufacturer shall make all documents available to Regulatory Authorities and Market Surveillance Authorities for ten (10) years after placement of the product in the market.

11) The supplier may submit the request mentioned in Clause (2/1/1), and carry out the aforementioned tasks on behalf of the manufacturer, on the condition of the manufacturer's consent.

Annex (4)

Supplier Declaration of Conformity Form

This form shall be filled in on the company's letterhead papers

1) Supplier data:

- Name: ----------
- Address: ----------
- ----------

- Contact person:
- Email: ----------
- Tel. No.: ----------
- Fax. No.: ----------

2) Product details:

- Trademark:----------
- Type:----------
- Product Description:----------
- Category (according to the standards):----------
- Reference standards/ technical specifications: ----------

We, hereby, acknowledge that the above-mentioned product is conforming to the Saudi technical regulation ( ), and the Saudi standards included therein.

- Person in Charge: ----------
- Company**:** ----------
- Signature: ---------- Date:--/--/-----