

## **Saudi Standards, Metrology and Quality Organization SASO**

### **Technical Regulation for Machinery Safety – Part 1: Portable and/or Hand-oriented Machines**

**This Technical Regulation was approved in the meeting of SASO Board of Directors No. (176) held on 18/11/1441 A.H. (09/07/2020 A.D.)**

**Published in the Official Gazette on  
23/01/1442 A.H. (11/09/2020 A.D.)**

**Version (1)**

**Note:**

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

## Contents

Contents .....	2
Preamble .....	3
Article (1) terms and definitions .....	4
Article (2) scope .....	7
Article (3) objectives .....	7
Article (4) obligations of supplier .....	7
Article (5) labelling .....	10
Article (6) conformity assessment procedures .....	10
Article (7) responsibilities of regulatory authorities .....	11
Article (8) responsibilities of market surveillance authorities .....	11
Article (10) general provisions .....	12
Article (11) transitional provisions .....	13
Article (12) publication .....	14
Annex (1-A) list of portable or hand-oriented machines products, .....	15
Annex (1-B) list of products and customs coding .....	30
Annex (2) general basic requirements for health and safety in machines	31
Annex (3) conformity assessment form (type 1a) .....	49
Annex (4) supplier declaration of conformity form .....	53



## 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 6 (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: **“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:** Portable or hand-oriented machines, safety components and related 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.

*to*



**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 other than human or animal power for direct application. The machine consists of parts connected to each other, provided that at least one part of it is mobile, and the parts are combined to perform a specific task.

**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):** Components (tools) that enhance the machine safety, and are presented separately in the market (spare parts that may be replaced, such as machine protective covers), where the absence or failure of these components during machine operation endangers the safety of users and the work area, and their function is limited to ensuring safety, and has nothing to do with function of the machine.

**Electromagnetic Disturbance:** Any electromagnetic phenomenon that may damage the performance of an electrical equipment or a unit of an electrical equipment or system. The Electromagnetic disturbance may be an electromagnetic noise, unwanted signal or a change in the spread of the medium itself.

**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, maintain, clean, repair or move the machines.

**Risk-taking:** The combination of the likelihood of injury or damage to health, and the degree to which it causes harm in dangerous situations.

**Preventive Device:** A part of the machine, a physical barrier that separates the operator from the machines used.

*to*



**Protection Device:** A risk-reducing device (other than the preventive device) either alone or in conjunction with the preventive device.

**Intended Use:** The use of machines in accordance with the information contained in the instructions used.

**Reasonable Anticipated Misuse:** The use of machines in a manner contrary to the one specified in the usage instructions, but may result from easily predicted human behavior.

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 be applied to portable and/or hand-oriented machines, safety components and related interchangeable equipment, in accordance with the relevant definitions and terms in Article (1) and the relevant standards contained in Annex (1).

It should be noted that adherence to this Technical Regulation shall not preclude compliance with the requirements of electromagnetic compatibility and the requirements of the Gulf Technical Regulation for Low-voltage Electrical Appliances and Equipment.

Weapons, medical devices, and medical supplies that are subject to the requirements of the Saudi Food and Drug Authority (SFDA), electric motors, household appliances, video equipment and office supplies and equipment are excluded from the scope of this Technical Regulation.

## Article (3) Objectives

This Technical Regulation aims to lay out the essential requirements of portable and/or hand-oriented machines 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 these 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 Health and Safety Requirements for the Design, Manufacture and Installation of Machines.**

**4/1/1 General Principles**

- A) The supplier shall perform risk analysis to ensure that the health and safety requirements applicable to machines and safety components are identified, and the results of risk analysis shall therefore be taken into consideration when designing and manufacturing machines, safety components and lifting equipment.

The supplier - through the repetitive process of risk analysis and reduction – shall do the following:

- 1) Determine the extent of the operation of machines and safety components that include their intended use, and define any reasonably expected misuse.
  - 2) Identify the risks that may be generated by machines and safety components, and the associated hazardous situations and cases.
  - 3) Risk assessment, taking into account the severity of injuries or potential harm to health and the likelihood of them occurring.
  - 4) Risk analysis in accordance with the objectives of this Technical Regulation, in order to determine whether the elimination and reduction of those risks is required and necessary. Such risks can be eliminated and the negative impact associated with them can be eliminated by applying preventive measures according to the order of priorities set out in Paragraph 1/1-b of Annex (2).
- B) The obligations stipulated in the basic health and safety requirements apply only when there are similar risks arising from the use of the machines and safety components involved in the probable and anticipated circumstances of the manufacturer or supplier, or in the expected extraordinary situations. In all cases, the conformity assessment procedures shall cover all the principles of safety integration, contained in section (1/1) of Annex (2), requirements for machines and safety components, and the instructions in sections (2/1/4) and (2/1/5) of Annex (2).
- C) The basic health and safety requirements set out in Annex (2) are mandatory; however, it may not be possible to achieve the objectives set by these requirements in light of continuous development, in which case, it shall be taken into consideration when designing the machine to achieve these goals as much as possible.

#### **4/1/2 Basic Health and Safety Requirements for Portable and/or Hand-oriented Machines**

Portable and/or hand-oriented machines, safety components and related interchangeable equipment shall be designed and manufactured to meet the basic technical requirements described in Annex (2), and complementary safety and health requirements for portable and/or hand-oriented machines, and the relevant standards contained in Annex (1) shall be referred to in order to fulfill unindicated requirements.

#### **4/2 Necessary Complementary Safety and Health Requirements for Portable and/or Hand-oriented Machines**



#### 4/2/1 General Requirements

Portable and/or hand-oriented machines shall meet the following requirements:

- A) Presence of a support surface with a sufficient area and a sufficient number of handles and struts of a suitable size, designed to ensure the stability of the machine in the required operating positions.
- B) When the machine is technically unstable, or there is a separate control device (to start and stop), or in the event that the machine remains in unsafe conditions after it is turned off, despite the presence of handles, the machine shall be equipped with a control device commensurate with the manual start-up of the machine and stopping of the machine in a way that allows the operator to start operating without leaving the handles.
- C) When there is no risk during accidental (unintentional) operation or continuation after the operator leaves the handles, similar steps shall be followed whenever that requirement is technically impossible.
- D) Allow - whenever necessary - to monitor the location of danger and visual control of the point of danger and the machine operation on the occupied materials.
- E) Portable and/or hand-oriented machine handles shall be designed and installed in such a way that helps to operate and stop easily.

#### 4/2/2 Instructions Manual

The instructions manual should include the information below regarding the vibration of portable or hand-oriented machines:

- A) The total value of vibration to which the hands/arms of the operator are exposed, especially when it exceeds the value ( $2.5 \text{ m/s}^2$ ).
- B) In case of uncertainty about the above measurement of the total value of vibration, these values shall indicate either the actual measurement of the machine-generated vibration, or the values based on measurements from technically comparable machines.

#### 4/3 Technical Requirements

The supplier shall meet the technical requirements of portable and/or hand-oriented machines, safety components and related interchangeable equipment, as follows:

- A) Portable or hand-oriented machines, safety components and related interchangeable equipment shall meet the technical requirements set out in the standards set out in Annex (1) of this Technical Regulation.
- B) Availability of an effective quality management system at the factory, (a factory certified with a quality management system in accordance with ISO 9001 shall be deemed as met the requirements of this clause).

#### 4/4 Metrological Requirements

International system of units (SI Units), multiples or parts thereof shall be used for portable and/or hand-oriented machines products, safety components and related



interchangeable equipment, during design, manufacture or trade, in accordance with the Saudi measurement and calibration system.

#### **4/5 Packaging Requirements**

- A) Ensure that portable or hand-oriented machines are assembled and arranged safely and properly during storage and transportation operations, in accordance with the packaging requirements set out in the relevant standard.
- B) Ensure that portable or hand-oriented machines containers and packaging materials are free of lead or any heavy metals.
- C) Ensure that the container and packaging materials of portable or hand-oriented machine bear the recycling symbol when using plastic containers.

#### **Article (5) Labelling**

Labelling for portable or hand-oriented machines, intended for placement and display in the market, shall be as follows:

- 5/1 Labels on the product packaging shall be in accordance with the technical requirements contained in this Technical Regulation and the relevant standards; as set out in Annex (1) of this Technical Regulation.
- 5/2 Labels shall include information, warnings, operating instructions, and sales documents contained in Annex (2) of this Technical Regulation, and shall be written in clear script and in a way that is difficult to remove.
- 5/3 All information used in the labelling shall be correct and proven.
- 5/4 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 product placement in the market - shall obtain a certificate of conformity issued by a notified body accredited by SASO in accordance with conformity assessment form (Type 1a) as per ISO/IEC 17067 as shown in Annex (2).
- 6/2 The notified body shall carry out the conformity assessment procedures according to the prescribed form in order to fulfill requirements of this Regulation and the relevant Saudi standards set out in Annex (1).
- 6/3 The product shall be accompanied by a technical file that includes the following:
  - A) Supplier Declaration of Conformity (manufacturer/importer) in accordance with the form attached in Annex (3).
  - B) Risk Assessment Document as specified in Annex (4).
- 6/4 The supplier shall cooperate with the Regulatory Authorities and Market Surveillance Authorities by providing the technical file, Certificates of Conformity and any other documents proving the conformity of a product with the requirements of this Technical Regulation, upon request.
- 6/5 Portable and/or hand-oriented machines, safety components and related interchangeable equipment that have obtained the Saudi Quality Mark or its

equivalent shall be deemed complied with the requirements stipulated in this Technical Regulation.

### **Article (7) Responsibilities of Regulatory Authorities (Port and Manufactories)**

Regulatory Authorities, as a part of their competences, shall:

- 7/1 Verify that portable and/or hand-oriented machines, safety components and related interchangeable equipment fulfill the specified conformity assessment procedures and the technical documents attached with the consignments.
- 7/2 Randomly take samples of portable and/or hand-oriented machines, safety components and related 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/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.

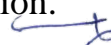
### **Article (8) Responsibilities of Market Surveillance Authorities**

Market Surveillance Authorities, as a part of their competences, shall:

- 8/1 Enforce the market surveillance procedures to the products in 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 stipulated herein and in the relevant standards.
- 8/2 Enforce the market surveillance procedures to the products in 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 stipulated herein and in the relevant standards.
- 8/3 Take samples of the product, whether from the market or warehouses of suppliers (manufacturers and importers), in order to conduct the necessary tests and to verify the conformity of such products with the requirements set out herein.
- 8/4 In case of non-conformity of– supplied or stored – products 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 necessary actions.

### **Article (9) Violations and Penalties**

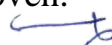
- 9/1 It is prohibited to manufacture, import, place, display, or even advertise products non-conforming to the provisions of this Technical Regulation.



- 9/2 Failure to meet the requirements of this 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-fixing or improper fixing 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 technical documentation.
  - D) Unavailability or incompleteness of product data/labels or usage instructions.
- 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 the market in order to remedy such violations, if possible. The product may be exported or destroyed within the period specified by the Market Surveillance Authorities.
  - B) Withdraw, restrain or destroy the products, or take any other necessary action to recall such products from markets. 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 In case of non-conformity of the products, SASO shall take the necessary actions concerning products non-conforming to the requirements of this Technical Regulation, including the cancellation of the relevant certificate of conformity, while taking the necessary measures with the notified body which issued the certificate, according to the Regulation of Conformity Assessment Bodies Acceptance.
- 9/5 Without prejudice to any other law, a party that violates any of the provisions hereof shall be subject to the penalties stipulated in applicable Anti-Commercial Fraud Law or any other superseding law.

## Article (10) General Provisions

- 10/1 Supplier shall bear 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 other related laws, in case any violation of the articles herein is proven.





- 10/2 This Technical Regulation shall not impede the supplier to comply with all other systems/regulations applicable in the Kingdom of Saudi Arabia; 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 portable and/or hand-oriented machines, safety components and related interchangeable equipment subject to the provisions of this Technical Regulation shall provide the inspectors of the Regulatory and Market Surveillance Authorities with all 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 corrections 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 herein, 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 morphological 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 herein. All beneficiaries of the application of this Technical Regulation shall adhere to the interpretations issued by SASO.

### **Article (11) Transitional Provisions**

- 11/1 The suppliers shall adjust their status in accordance with the provisions of this Technical Regulation, within a period of no more than six months as of the date of publication in the Official Gazette.

- 11/2 It is prohibited to circulate violating products after one year as of the date of publication of this Technical Regulation in the Official Gazette.
- 11/3 This Technical Regulation - once adopted - supersedes all the preceding regulations related to the scope of this Technical Regulation.

### **Article (12) Publication**

This Technical Regulation shall be published in the Official Gazette.



Annex (1)

A) List of Portable or Hand-oriented Machines Products, Safety Components and Interchangeable Equipment and Related Standards

No.	Product	Title of Standard in Arabic	Title of Standard in English	Standard No.
1	Household appliances and electrical appliances	Hand-held motor-operated electric tools - Safety - Part 2-4: Particular requirements for sanders and polishers other than disk type.	الأدوات الكهربائية المحمولة والتي تعمل بمحركات - السلامة - الجزء: 2-4 المتطلبات الخاصة بماكينات السنفرة الرملية والملمعات خلاف النوع القرصي	SASO IEC 60745-2-4
2		Hand-held motor-operated electric tools - Safety - Part 2-5: Particular requirements for circular saws.	المعدات الكهربائية المحمولة التي تعمل بمحرك - السلامة - الجزء: 2-5 متطلبات خاصة للمناشير الدائرية.	SASO IEC 60745-2-5
3		Household and similar electrical appliances - Safety - Part 2-91: Particular requirements for walk-behind and hand-held lawn trimmers and lawn edge trimmers.	الأجهزة المنزلية والأجهزة الكهربائية المماثلة - الجزء: 2-91 المتطلبات الخاصة بأدوات قص الأعشاب وقص حواف الأعشاب التي تمسك باليد ويمشي العامل خلفها.	SASO-IEC-60335-2-91
4		Household and similar electrical appliances - Safety - Part 2-94: Particular requirements for scissors type grass shears.	الأجهزة الكهربائية المنزلية والأجهزة المماثلة لها - السادسة - الجزء: 2-94 متطلبات خاصة لأجهزة قص الحشائش من النوع المقص.	SASO-IEC-60335-2-94

No.	Product	Title of Standard in Arabic	Title of Standard in English	Standard No.
5		Household and similar electrical appliances - Safety - Part 2-100: Particular requirements for hand-held mains-operated garden blowers, vacuums and blower vacuums.	الأجهزة الكهربائية المنزلية والأجهزة المماثلة لها - الجزء: 2-100 المتطلبات الخاصة بالأجهزة النفخ والكنس والنفخ والكنس معا المستخدمة في الحدائق، المحمولة يدويا والتي توصل بمنبع تغذية الكهرباء.	SASO-IEC-60335-2-100
6		Hand-held motor-operated electric tools - Safety - Part 1: General requirements	المعدات الكهربائية المحمولة التي تعمل بمحرك - الجزء: 1 المتطلبات العامة.	SASO-IEC-60745-1
7		Hand-held motor-operated electric tools - Safety - Part 2-1: Particular requirements for drills and impact drills.	المعدات الكهربائية المحمولة التي تعمل بمحرك - السلامة - الجزء: 2-1 متطلبات خاصة للمثاقيب والمثاقيب بالصدمة.	SASO-IEC-60745-2-1
8		Hand-held motor-operated electric tools - Safety - Part 2-2: Particular requirements for screwdrivers and impact wrenches.	الأدوات الكهربائية المحمولة والتي تعمل بمحركات - السلامة - الجزء: 2-2 المتطلبات الخاصة بالمفكات ومفاتيح الربط الدفعية.	SASO-IEC-60745-2-2
9		Hand-held motor-operated electric tools - Safety - Part 2-3: Particular requirements for grinders, polishers and disk-type sanders.	المعدات الكهربائية المحمولة التي تعمل بمحرك - السلامة - الجزء: 2-3 متطلبات خاصة لأجهزة الجرش والتلميع والصقل من نوع المرملة القرصية.	SASO-IEC-60745-2-3



No.	Product	Title of Standard in Arabic	Title of Standard in English	Standard No.
10		Hand-held motor-operated electric tools - Safety - Part 2-5: Particular requirements for circular saws.	المعدات الكهربائية المحمولة التي تعمل بمحرك - السلامة - الجزء: 2-5 متطلبات خاصة للمناشير الدائرية.	SASO-IEC-60745-2-5
11		Hand-held motor-operated electric tools - Safety - Part 2-6: Particular requirements for hammers.	المعدات الكهربائية المحمولة التي تعمل بمحرك - السلامة - الجزء: 2-6 متطلبات خاصة للمطارق.	SASO-IEC-60745-2-6
12		Hand-held motor-operated electric tools - Safety - Part 2-12: Particular requirements for concrete vibrators.	المعدات الكهربائية المحمولة التي تعمل بمحرك - السلامة - الجزء: 2-12 متطلبات خاصة لرجاج الخرسانة.	SASO-IEC-60745-2-12
13		Hand-held motor-operated electric tools - Safety - Part 2-22: Particular requirements for cut-off machines.	الأدوات الكهربائية المحمولة التي تعمل بمحرك - السلامة - الجزء: 2-22 متطلبات خاصة للمكينات القطع.	SASO-IEC-60745-2-22
14		Hand-held motor-operated electric tools - Safety - Part 2-20: Particular requirements for band saws.	المعدات الكهربائية المحمولة التي تعمل بمحرك - السلامة - الجزء: 2-20 متطلبات خاصة للمنشار الشريطي	SASO-IEC-60745-2-20
15		Hand-held motor-operated electric tools - Safety - Part 2-21: Particular requirements for drain cleaners.	المعدات الكهربائية المحمولة التي تعمل بمحرك - السلامة - الجزء: 2-21 متطلبات خاصة لمنظف المجاري.	SASO-IEC-60745-2-21

No.	Product	Title of Standard in Arabic	Title of Standard in English	Standard No.
16		Hand-held motor-operated electric tools - Safety - Part 1: General requirements.	المعدات الكهربائية المحمولة التي تعمل بمحرك - الجزء: 1 المتطلبات العامة.	SASO-IEC-60745-1
17		Hand-held motor-operated electric tools - Safety - Part 2-8: Particular requirements for shears and nibblers	الأدوات الكهربائية التي تعمل بمحرك والمحمولة باليد - السلامة - الجزء: 2-8 المتطلبات الخاصة بالمقصات والقراضات اليدوية.	SASO-IEC-60745-2-8
18		Hand-held motor-operated electric tools - Safety - Part 2-9: Particular requirements for tappers.	الأدوات الكهربائية التي تعمل بمحرك والمحمولة باليد - السلامة - الجزء: 2-9 المتطلبات الخاصة بمكائن اللولبية.	SASO-IEC-60745-2-9
19		Hand-held motor-operated electric tools - Safety - Part 2-16: Particular requirements for tackers.	الأدوات الكهربائية المحمولة والتي تعمل بمحركات - السلامة - الجزء: 2-16 المتطلبات الخاصة بمعدات التثبيت الكهربائية.	SASO-IEC-60745-2-16
20		Hand-held motor-operated electric tools - Safety - Part 2-14: Particular requirements for planers.	المعدات الكهربائية المحمولة التي تعمل بمحرك - السلامة - الجزء: 2-14 متطلبات خاصة لأجهزة قشط الأسطح المسحاج الآلي.	SASO-IEC-60745-2-14
21		Hand-held motor-operated electric tools - Safety - Part 2-18: Particular	المعدات الكهربائية المحمولة التي تعمل بمحرك - السلامة - الجزء: 2-	SASO-IEC-60745-2-18

No.	Product	Title of Standard in Arabic	Title of Standard in English	Standard No.
		requirements for strapping tools.	18 المتطلبات الخاصة لأدوات تثبيت الأشرطة	
22		Hand-held motor-operated electric tools - Safety - Part 2-1: Particular requirements for drills and impact drills.	المعدات الكهربائية المحمولة التي تعمل بمحرك - السلامة - الجزء: 1-2 متطلبات خاصة للمثاقيب والمثاقيب بالصدمة	SASO-IEC-60745-2-1
23		Hand-held motor-operated electric tools - Safety - Part 2-11: Particular requirements for reciprocating saws (jig and sabre saws).	المعدات الكهربائية المحمولة التي تعمل بمحرك - السلامة - الجزء: 2-11 متطلبات خاصة للمناشير الترددية مناشير الهز المنحنية.	SASO-IEC-60745-2-11
24		Hand-held motor-operated electric tools - Safety - Part 2-13: Particular requirements for chain saws.	المعدات الكهربائية المحمولة التي تعمل بمحرك - السلامة - الجزء: 2-13 متطلبات خاصة للمناشير السلسلية.	SASO-IEC-60745-2-13
25		Hand-held motor-operated electric tools - Safety - Part 2-15: Particular requirements for hedge trimmers.	المعدات الكهربائية المحمولة التي تعمل بمحرك - السلامة - الجزء: 2-15 متطلبات خاصة لأجهزة شذب الأغصان.	SASO-IEC-60745-2-15
26	Household appliances and Electrical appliances	Hand-held motor-operated electric tools - Safety - Part 2-17: Particular requirements for routers and trimmers.	المعدات الكهربائية المحمولة التي تعمل بمحرك - السلامة - الجزء: 2-17 المتطلبات الخاصة لمعدات قطع الزوائد وشذب الحواف	SASO-IEC-60745-2-17

No.	Product	Title of Standard in Arabic	Title of Standard in English	Standard No.
27		Hand-held motor-operated electric tools - Safety - Part 2-19: Particular requirements for jointers.	المعدات الكهربائية المحمولة التي تعمل بمحرك - السلامة - الجزء: 2-19 المتطلبات الخاصة لحفار الخشب.	SASO-IEC-60745-2-19
28		Hand-held motor-operated electric tools - Safety - Part 2-3: Particular requirements for grinders, polishers and disk-type sanders.	المعدات الكهربائية المحمولة التي تعمل بمحرك - السلامة - الجزء: 2-3 متطلبات خاصة لأجهزة الجرش والتلميع والصقل من نوع المرملة القرصية	SASO-IEC-60745-2-3
29		Safety of transportable motor-operated electric tools - Part 2: Particular requirements for radial arm saws.	أمان المعدات الكهربائية المحمولة التي تعمل بمحرك - الجزء: 2-2 متطلبات خاصة بالمناشير قطرية الذراع.	SASO-IEC-61029-2-2
30	Safety of portable electrical equipment	Safety of transportable motor-operated electric tools - Part 2: Particular requirements for planers and thicknessers.	أمان المعدات الكهربائية المحمولة التي تعمل بمحرك - الجزء: 2-3 متطلبات خاصة لأجهزة قشط الأسطح المسحاج الآلي وتسوية الأسطح.	SASO-IEC-61029-2-3
31		Safety of transportable motor-operated electric tools - Part 2: Particular requirements for bench grinders.	أمان المعدات الكهربائية المحمولة التي تعمل بمحرك - الجزء: 2-4 متطلبات خاصة بالمطاحن ذات القاعدة.	SASO-IEC-61029-2-4
32		Safety of transportable motor-operated electric tools - Part 2: Particular	أمان المعدات الكهربائية المتنقلة والتي تعمل بمحرك	SASO-IEC-61029-2-1

No.	Product	Title of Standard in Arabic	Title of Standard in English	Standard No.
		requirements for circular saws.	- الجزء: 1-2 متطلبات خاصة بالمناشير الدائرية.	
33		Safety of transportable motor-operated electric tools - Part 2-11: Particular requirements for mitre-bench saws.	أمان المعدات الكهربائية المحمولة التي تعمل بمحرك - الجزء: 11-2 متطلبات خاصة بمناشير الزوايا ذات القاعدة	SASO-IEC-61029-2-11
34		Safety of transportable motor-operated electric tools - Part 2: Particular requirements for diamond saws with water supply.	أمان المعدات الكهربائية المحمولة التي تعمل بمحرك - الجزء: 2-7 متطلبات خاصة بالمناشير الماسية المزودة بالماء.	SASO-IEC-61029-2-7
35		Safety of transportable motor-operated electric tools - Part 2: Particular requirements for single spindle vertical moulders.	أمان المعدات الكهربائية المحمولة التي تعمل بمحرك - الجزء: 2-8 متطلبات خاصة لمعدات تشكيل الخشب ذات المحور الرأسي	SASO-IEC-61029-2-8
36	Safety of portable electrical equipment	Safety of transportable motor-operated electric tools - Part 2: Particular requirements for mitre saws.	أمان المعدات الكهربائية المحمولة التي تعمل بمحرك - الجزء: 2-9 متطلبات خاصة بمناشير الزوايا	SASO-IEC-61029-2-9
37		Safety of transportable motor-operated electric tools - Part 2-10: Particular requirements for cutting-off grinders.	أمان المعدات الكهربائية المحمولة التي تعمل بمحرك - الجزء: 2-10 متطلبات خاصة بمجلاحة القطع.	SASO-IEC-61029-2-10
38		Safety of transportable motor-operated electric tools - Part 2: Particular requirements for band saws.	أمان المعدات الكهربائية المحمولة التي تعمل بمحرك - الجزء: 2-5 متطلبات خاصة بالمناشير الشريطية.	SASO-IEC-61029-2-5

No.	Product	Title of Standard in Arabic	Title of Standard in English	Standard No.
39		Safety of transportable motor-operated electric tools - Part 2: Particular requirements for diamond drills with water supply.	أمان المعدات الكهربائية المحمولة التي تعمل بمحرك - الجزء: 2-6 متطلبات خاصة بالمثاقب الماسية المزودة بالماء.	SASO-IEC-61029-2-6
40		Machinery for forestry -- Portable chain-saws -- Vocabulary	الآلات، للغابات - السلسلة المنشارية النقالة - المفردات.	SASO-GSO-ISO-6531
41		Forestry machinery - Portable chain-saw front hand-guard - Dimensions and clearances.	آلات الغابات - الحامي - اليدوي الأمامي للسلسلة - المنشارية النقالة - الأبعاد والتوضيحات	SASO-GSO-ISO-6533
42		Portable chain-saw - Chain brake performance	السلسلة المنشارية النقالة - أداء مكابح السلسلة	SASO- GSO-ISO-6535
43		Forestry machinery - Portable chain-saw - Minimum handle clearance and sizes.	آلات الغابات - السلسلة المنشارية النقالة - مقاسات وترخيص المقبض الأدنى.	SASO-ISO-7914
44	Forestry machinery	Machinery for forestry - Safety requirements and testing for pole-mounted powered pruners - Part 1: units fitted with an integral combustion.	آلات الغابات - متطلبات السلامة والاختبار لمقصات تعمل بالطاقة محمولة على عمود - الجزء: 1 وحدات مزودة بمحرك احتراق مدمج.	SASO-GSO-ISO-11680-1
45		Machinery for forestry - Safety requirements and testing for pole-mounted powered pruners - Part 2: units for use with a back pack power source.	آلات الغابات - متطلبات السلامة والاختبار لمقصات تعمل بالطاقة محمولة على عمود - الجزء: 2 وحدات للاستخدام مع مصدر الطاقة على ظهرها	SASO-GSO-ISO-11680-2

No.	Product	Title of Standard in Arabic	Title of Standard in English	Standard No.
46		Machinery for forestry - Portable chain-saw - Safety requirements and testing - Part 1: Chain-saws for forest service.	آلات الغابات - متطلبات السلامة والفحص للمنشار السلسلي المحمول - الجزء: ١ مناشير سلسلية لخدمة الغابات.	SASO-GSO-ISO-11681-1
47		Machinery for forestry - Portable chain-saw - Safety requirements and testing - Part 2: Chain-saws for tree service.	الات الغابات - السلسلة المنشارية النقالة - متطلبات السلامة والاختبار - الجزء: 2 السلسلة المنشارية لخدمة الشجر.	SASO-GSO-ISO-11681-2
48		Forestry machinery -- Portable chain-saws -- Non-manually actuated chain brake performance	آلات الغابات - السلسلة - المنشارية النقالة - أداء المكابح (الفرامل) أداء السلسلة غير اليدوية.	SASO-GSO-ISO-13772
49		Forestry machinery -- Vibration test code for portable hand-held machines with internal combustion engine -- Vibration at the handles.	آلات الغابات - رمز اختبار الاهتزاز لآلات اليدوية النقالة ذات محركات الاحتراق الداخلي - الاهتزاز عند المقابض.	SASO-GSO-ISO-22867
50		Forestry machinery -- Noise test code for portable hand-held machines with internal combustion engine -- Engineering method.	آلات البستنة والزراعة - كود اختبار ضجيج الآلات المتنقلة المحمولة باليد ذات محرك احتراق داخلي - الطريقة الهندسية (الفئة الثانية من الدقة).	SASO-GSO-ISO-22868
51	Tools and machinery	Rotary and percussive pneumatic tools -- Performance tests.	أدوات الثقب الدوارة والصدمية التي تعمل	SASO GSO ISO 2787

No.	Product	Title of Standard in Arabic	Title of Standard in English	Standard No.
			بالهواء المضغوط - اختبارات الأداء.	
52		Compressors, pneumatic tools and machines - Vocabulary - Part 3: Pneumatic tools and machines.	الضواغط والآلات والأدوات التي تعمل بالهواء المضغوط - المصطلحات - الجزء: 3 الآلات والأدوات التي تعمل بالهواء المضغوط.	SASO GSO ISO 3857-
53		Pneumatic tools and machines – Vocabulary.	الأدوات والآلات الهوائية - مصطلحات	SASO GSO ISO 5391
54		Rotary tools for threaded fasteners -- Performance test method.	الأدوات الدوارة المستخدمة مع أدوات التثبيت الملولبة - طرق اختبار الأداء.	SASO GSO ISO 5393
55		Hand-held non-electric power tools -- Safety requirements -- Part 1: Assembly power tools for non-threaded mechanical fasteners.	الأدوات الألية غير الكهربائية المحمولة باليد - متطلبات السلامة - الجزء: 1 تجميع الأدوات الألية للمثبتات الميكانيكية غير المسننة.	SASO GSO ISO 11148-1
56		Hand-held non-electric power tools -- Safety requirements -- Part 2: Cutting-off and crimping power tools.	الأدوات الألية غير الكهربائية المحمولة باليد - متطلبات السلامة - الجزء: 2 الأدوات الألية للقطع والتغضين.	SASO GSO ISO 11148-2
57		Hand-held non-electric power tools -- Safety requirements -- Part 3: Drills and tappers.	الأدوات الألية غير الكهربائية المحمولة باليد - متطلبات السلامة - الجزء: 3 المثقبات والطارقات.	SASO GSO ISO 11148-3

ط





No.	Product	Title of Standard in Arabic	Title of Standard in English	Standard No.
58		Hand-held non-electric power tools -- Safety requirements -- Part 4: Non-rotary percussive power tools.	الأدوات الألية غير الكهربائية المحمولة باليد - متطلبات السلامة - الجزء: 4 أدوات الطرق الألية غير الدوارة	SASO GSO ISO 11148-4
59		Hand-held non-electric power tools -- Safety requirements -- Part 5: Rotary percussive drills	الأدوات الألية غير الكهربائية المحمولة باليد - متطلبات السلامة - الجزء: 5 مثاقيب الطرق الدوارة.	SASO GSO ISO 11148-5
60		Hand-held non-electric power tools -- Safety requirements -- Part 6: Assembly power tools for threaded fasteners.	الأدوات الألية غير الكهربائية المحمولة باليد - متطلبات السلامة - الجزء: 6 تجميع الأدوات الألية للمثبتات المسننة.	SASO GSO ISO 11148-6
61		Hand-held non-electric power tools -- Safety requirements -- Part 7: Grinders.	الأدوات الألية غير الكهربائية المحمولة باليد - متطلبات سلامة - الجزء: 7 الجلاخات.	SASO GSO ISO 11148-7
62		Hand-held non-electric power tools -- Safety requirements -- Part 8: Sanders and polishers.	الأدوات الألية غير الكهربائية المحمولة باليد - متطلبات السلامة - الجزء: 8 أدوات الصنفرة والصلقل.	SASO GSO ISO 11148-8
63		Hand-held non-electric power tools -- Safety requirements -- Part 9: Die grinders.	الأدوات الألية غير الكهربائية المحمولة باليد - متطلبات السلامة - الجزء: 9 الجلاخات الدقيقة.	SASO GSO ISO 11148-9
64		Hand-held non-electric power tools -- Safety requirements -- Part 10:	الأدوات الألية غير الكهربائية المحمولة باليد -	SASO GSO ISO 11148-10

No.	Product	Title of Standard in Arabic	Title of Standard in English	Standard No.
		Compression power tools.	متطلبات السلامة – الجزء: 10 أدوات الانضغاط الآلية.	
65		Hand-held non-electric power tools -- Safety requirements -- Part 11: Nibblers and shears.	الأدوات الآلية غير الكهربائية المحمولة باليد – متطلبات السلامة – الجزء: 11 ماكينات القضم والقص.	SASO GSO ISO 11148-11
66		Hand-held non-electric power tools -- Safety requirements -- Part 12: Circular, oscillating and reciprocating saws.	الأدوات الآلية غير الكهربائية المحمولة باليد – متطلبات السلامة – الجزء: 12 المناشير المتأرجحة والترددية.	SASO GSO ISO 11148-12
67		Hand-held non-electric power tools -- Noise measurement code -- Engineering method (grade2).	أدوات يدوية غير كهربائية – كود قياس الضوضاء – الطريقة الهندسية (الدرجة 2)	SASO GSO ISO 15744
68		Hydraulic tools – Vocabulary.	الأدوات الهيدروليكية – المصطلحات	SASO GSO ISO 17066:2013
69		Rotary tool for threaded fasteners-- Hydraulic impulse tools -- Performance test method.	الأداة الدوارة للمثبتات المسننة – أدوات النبض الهيدروليكية – طريقة اختبار الأداء.	SASO GSO ISO/TS 17104
70		Mechanical vibration -- Hand-held and hand-guided machinery -- Principles for evaluation of vibration emission.	الاهتزاز الميكانيكي – مكائن محمولة وموجهة يدويا – مبادئ لتقييم انبعاث الاهتزاز.	SASO GSO ISO 20643
71		Hand-held power tools - - Impulse wrenches -- Dimensions and	أدوات كهربائية محمولة باليد – شدات قوة الدفع –	SASO GSO ISO/TS 21108

No.	Product	Title of Standard in Arabic	Title of Standard in English	Standard No.
		tolerances of interface to power socket.	أبعاد ومسموحات السطح البيني بالنسبة لقابس الكهرباء.	
72		Hand-held portable power tools -- Test methods for evaluation of vibration emission -- Part 1: Angle and vertical grinders.	الأدوات الآلية النقالة المحمولة يدويًا - طرق اختبار لتقييم انبعاث الاهتزازات - الجزء: 1 معدات التجليخ المائلة والرأسية.	SASO GSO ISO 28927-1
73		Hand-held portable power tools -- Test methods for evaluation of vibration emission -- Part 2: Wrenches, nutrunners and screwdrivers.	الأدوات الآلية النقالة المحمولة يدويًا - طرق اختبار لتقييم انبعاث الاهتزازات - الجزء: 2 مفاتيح الربط وآلات لف الصواميل والمفكات.	SASO GSO ISO 28927-2
74		Hand-held portable power tools -- Test methods for evaluation of vibration emission -- Part 3: Polishers and rotary, orbital and random orbital sanders.	الأدوات الآلية النقالة المحمولة يدويًا - طرق اختبار لتقييم انبعاث الاهتزازات - الجزء: 3 معدات التلميع ومعدات الصنفرة الدوارة والمدارية العشوائية.	SASO GSO ISO 28927-3
75		Hand-held portable power tools -- Test methods for evaluation of vibration emission -- Part 4: Straight grinders.	الأدوات الآلية النقالة المحمولة يدويًا - طرق اختبار لتقييم انبعاث الاهتزازات - الجزء: 4 معدات التجليخ المستقيمة.	SASO GSO ISO 28927-4
76		Hand-held portable power tools -- Test methods for evaluation	الأدوات الآلية النقالة المحمولة يدويًا - طرق	SASO GSO ISO 28927-5

No.	Product	Title of Standard in Arabic	Title of Standard in English	Standard No.
		of vibration emission -- Part 5: Drills and impact drills.	اختبار لتقييم انبعاث الاهتزازات- الجزء : 5 المثاقب والمثاقب الصدمية.	
77		Hand-held portable power tools -- Test methods for evaluation of vibration emission -- Part 6: Rammers.	الأدوات الآلية النقالة المحمولة يدويًا - طرق اختبار لتقييم انبعاث الاهتزازات- الجزء : 6 المدكات.	SASO GSO ISO 28927-6
78		Hand-held portable power tools -- Test methods for evaluation of vibration emission -- Part 7: Nibblers and shears.	الأدوات الآلية النقالة المحمولة يدويًا - طرق اختبار لتقييم انبعاث الاهتزازات- الجزء : 7 معدات القضم والقص.	SASO GSO ISO 28927-7
79		Hand-held portable power tools -- Test methods for evaluation of vibration emission -- Part 8: Saws, polishing and filing machines with reciprocating action and small saws with oscillating or rotating action.	الأدوات الآلية النقالة المحمولة يدويًا - طرق اختبار لتقييم انبعاث الاهتزازات- الجزء : 8 المناشير ومعدات التلميع والبرد ذات الأداء الترددي والمناشير الصغيرة ذات الأداء التذبذبي أو الدوار.	SASO GSO ISO 28927-8
80		Hand-held portable power tools -- Test methods for evaluation of vibration emission -- Part 9: Scaling hammers and needle scalers.	الأدوات الآلية النقالة المحمولة يدويًا - طرق اختبار لتقييم انبعاث الاهتزازات- الجزء : 9 مطارق إزالة القشور والمكاشط الإبرية.	SASO GSO ISO 28927-9
81		Hand-held portable power tools -- Test methods for evaluation	الأدوات الآلية النقالة المحمولة يدويًا - طرق	SASO GSO ISO 28927-10

No.	Product	Title of Standard in Arabic	Title of Standard in English	Standard No.
		of vibration emission -- Part 10: Percussive drills, hammers and breakers.	اختبار لتقييم انبعاث الاهتزازات- الجزء : 10 المثاقب والمطارق والكسارات الدقاقة.	
82		Hand-held portable power tools -- Test methods for evaluation of vibration emission -- Part 11: Stone hammers.	الأدوات الآلية النقالة المحمولة يدويًا - طرق اختبار لتقييم انبعاث الاهتزازات- الجزء : 11 مطارق الأحجار.	SASO GSO ISO 28927

**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	Motorized machines with a cutting, grinding, and drilling tool rotating in a horizontal or vertical line.	8433
2	Rotary type (including combined rotary-percussion)	8467

**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 Machines

#### 1 Main Health and Safety Requirements

##### 1/1 Integration Principles of Safety

A) Machines shall be designed and manufactured to be installed and intended for use, operation, alteration and maintenance without exposing people to any risk, when performing these operations under the expected conditions of use, taking into account the occurrence of any reasonably foreseeable misuse.

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

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

- Preventing or reducing the risks as much as possible (not tampering with the design or installation of the machines).
- Taking the necessary precautions regarding risks that cannot be eliminated.
- Educating users about the risks that 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 machines 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 machines must be designed and manufactured in a way that prevents unnatural use if such use would result in a risk, and whenever appropriate. The instructions must be directed so that the user's attention can be given to the methods of using the machines according to the experience gained.

D) The machines must be designed and manufactured taking into account the constraints encountered by the paralysis as a result of the reasonable or expected use of Personal protective equipment (PPE).

E) Machines must 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 machines or manufactured during the use of the machines must not endanger the health and safety of persons, especially when using liquids, and care must be taken - when manufacturing and installing the

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

### **1/3 Lighting**

The machines must 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 machines.

The machines must be designed and installed in such a way that 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 must be provided.

### **1/4 Design of Machines to Facilitate Handling**

1/4/1 Machines or any parts of their components must have the following characteristics:

A) The ability to handle and transport machines safely.

B) Packaging and design of machines in a way that they can be stored safely without damaging their components.

1/4/2 When transporting the machines or any part of their components, there should be no possibility of any sudden movement or risks due to instability, as long as dealing with the machines 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 machines prevent them from being moved manually, the machines or any parts of their components must meet the following requirements:

A) Equipped with lifting accessories.

B) Designed to be fitted with these accessories.

C) Prepared to mount a lifting device so that it can be lifted easily.

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

A) Easily removable.

B) Equipped to lift and move safely.

Special arrangements must 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 should - under the specified conditions of use - be minimized as possible, taking into account the provision of comfortable environmental conditions such as:



- A) Allow the operator to change the dimensions, strength and durability of the machine.
- B) Provide enough space for easy movement of the operator
- C) Not to exceed the specified rate of work for the machines.
- D) Avoid increasing operator control operations of the machine, especially those requiring prolonged focus.
- E) Modify the machine user interface in line with the nature of the operators.

## **1/6 Operating Positions**

If the purpose of these machines is to be used in an environment that represents a source of risk to the health and safety of the operator, or if the machines themselves represent a source of danger, adequate means must be provided to ensure good working conditions for the operator against any foreseeable risks. The operating position must 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 evacuate quickly, and moreover, an emergency exit must be provided in a direction other than the usual exit direction, as for mobile machines, they must also return to the workplace.

## **1/7 Seats**

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

The seat must give the operator a stable and comfortable position, and moreover, the seat must be convenient and close to the controllers, which makes him control the work easily.

If the machines are subject to vibration, the seat must be designed and installed in a way that reduces the vibration transmitted to the operator to the lowest possible degree reasonably well, and the seat must be designed to withstand all operational stresses that the operator may be exposed to. The seats must be provided with a footrest covered with anti-slip material.

## **2 Control Systems**

### **2/1 Control Devices**

2/1/1 Control devices shall be:

- A) Clearly visible and recognizable, using pictograms whenever possible.
- B) Placed in locations that allow them to be operated safely without wanting or wasting time, and without the possibility of confusion.
- C) Designed in a way that makes movement difficult with its function.
- D) Outside the danger zone, except in cases of necessity for some control devices such as the presence of the on or off switch, and in emergency cases.

- E) Placed in safe locations so as not to pose additional risks.
- F) Protected and designed for use in situations of risk 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 must be paid to emergency stop devices that may also be subject to significant operational forces.
- 2/1/2 In cases where control devices 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 must be clearly written when necessary.
- 2/1/3 Control devices 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 machines must be provided with the indicators required for safe operation, and the operator should be able to read them from the control position.
- 2/1/5 The operator must ensure that no person is present in the danger 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 danger area. And when it is not possible to implement any of these measures, the control system must give an audio or visual alarm, or both, before starting the machines, with adequate time being given for the persons exposed to the danger to leave the danger area or prevent the operation of the machines.
- 2/1/6 If necessary, means must be provided to ensure that the machines are only controlled from the control positions, which are located in one place or several pre-defined places. When there is more than one control position, the control system should 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 must be equipped with all required control devices, without the operators hindering each other's work or endangering others.

## 2/2 Startup

The operation of the machines must be started by means of intended operation (only at the decision and will of the operator), and that is through the control device equipped for this purpose.

This same condition applies in the following cases:

- A) Restarting the machines after stopping for whatever reason.
- B) A major change in operating conditions.

In spite of this, machines can be restarted or changed in operating conditions can be made by means of the intended operation of another device, other than the control device equipped for this purpose, provided that this does not lead to the occurrence of a hazardous situation

As for machines operating in automatic mode, it may be possible to start or restart machines after being stopped or to make a change in operating conditions without human intervention, provided that this does not lead to any hazardous situation.

When the machines contain many control devices specialized in starting operation, and hence the possibility of exposing some operators to danger, additional devices must be installed to eliminate these risks, and if safety requirements require starting or stopping the operation in a specified sequence, there must be devices that ensure that these processes are applied in the correct order.

## **2/3 Shutdown**

### **2/3/1 Normal Shutdown**

- A) The machines must be equipped with a control device that enables them to move to a full stop mode safely.
- B) Every workplace must be equipped with a control device to stop some or all of the machines' functions, based on the risks involved, until the machines are safely operated.
- C) The priority in the controls - related to stopping the operation of the machines - shall be the controls related to the starting.
- D) The interruption of the power supply to the operators concerned should be automatic as soon as the machines or their hazardous functions cease to function.
- E) The stop control device must be used - for operational reasons - without cutting the power supply for actuators, with the necessity of monitoring the status of stop and maintenance.

### **2/3/2 Stopping Caused by the State of Emergency**

- A) The machines must be equipped with one or more emergency stop devices, in order to avoid actual or imminent danger situations.
- B) The following are excluded from this:
  - 1) Machines in which the emergency stop device does not reduce the size of the risk, either because it does not reduce the stopping time, or because it does not activate the necessary precautions to deal with the risks.
  - 2) Handheld and / or Portable machines.
- C) The stopping device must be:
  - 1) Clearly visible, easy to locate, and quickly accessible.
  - 2) Able to stop the dangerous operation as quickly as possible, without causing additional risks.



- 3) Able to trigger or allow some preventive vibration, whenever necessary.
- D) Once the emergency stop device is activated after receiving the stop command, this command must be supported by engaging the emergency stop device so that this interlock is specifically bypassed.
- E) The device must not be engaged without operating the stop command, so that the device can only be disengaged with proper operation, and disengaging the device should not restart the machine, but only allow a restart.
- F) The emergency stop function must be available and operating at all times, regardless of the operating mode.
- G) Emergency stop devices must support other protection measures, without being a substitute for them.

## 2/4 Assembling Machines

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

## 2/5 Choice of Control or Operating 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 machines are designed and installed in a way that allows them to be used in usual conditions of control or operation, which requires the activation of preventive measures or different operating procedures, These machines must be equipped with a position limiter that can be locked in all positions, and all position parameters must be clear and compatible with a single operating or control mode.
- 2/5/3 The limiter can be replaced by another limiting method, which restricts the use of certain functions in machines for certain groups of operators.
- 2/5/4 The machines - in some operating cases - must be qualified to operate even if the protective device is removed or disabled, and the operating limiter or control mode must be able to do the following simultaneously:
  - A) Disable all other control or operation modes.
  - B) The possibility of operating hazardous jobs only by control devices that require sustainable measures.
  - C) The possibility of operating hazardous jobs only in situations of low risk, while preventing severe consequences of the risks.
  - D) Preventing the operation of any dangerous job by means of intentional or unintended operating procedures, through the sensors of the machines.

*to*



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

## **2/6 Power Outage**

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

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

- A) Prohibition of sudden starting of machinery.
- B) The properties of the machines are not changed randomly, which may lead to dangerous situations (accidents) or dangerous situations.
- C) Prohibition of stopping machines when a stop order is given.
- D) Being careful not to drop or blow off moving parts of the machines.
- 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 machines and their components and installations must be sufficiently stable to avoid the risk of capsizing, falling or accidental movement (unintended during transportation, assembly, disassembly, or any other work related to the operation of the machines.

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

### **3/2 Danger of Dismantling During Operation**

3/2/1 The parts of machines and their various connections must 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 must 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 should indicate the type and frequency of inspections and maintenance required for safety purposes, and the instructions should 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 the adoption of safety measures, the concerned parts must



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 that are under high pressure - must be able to withstand potential internal and external stresses, and they must be protected and secured by force to ensure that there are no hazards due to use.

3/2/6 When processing materials are fed to the machine automatically, the conditions below must be met, in order to avoid putting people at risk:

A) When there is contact between the workpiece (the work piece) and the machine, the machine must be in its normal condition and operable.

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

### **3/3 Risks Resulting from Falling or Flying Objects**

Precautions should be taken to prevent hazards 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 have rough surfaces, which may cause injury, to the extent that the objectives of use allow.

#### **3/3/2 Risks Related to Installed Machines**

The machines must 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 machines are used for the purpose of carrying out various operations that require the removal of the existing work piece, between each process manually, which requires the ability to start or stop any element of the unprotected elements separately.

#### **3/3/3 Risks Related to Changing Operating Conditions**

When machines operate in various conditions, they must be designed, manufactured, configured, and installed in such a way that these conditions can be created and modified safely and reliably.

#### **3/3/4 Risks Related to the Moving Parts**

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

All necessary steps must be taken to prevent the uncontrolled 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 must be provided if possible, in order to safely prevent the equipment from failing.



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

### **3/3/5 Type of Protection against Hazards caused by Moving Parts**

Protectors or protective devices which protect against hazards arising from operating the moving parts should be selected according to the type of hazard, and the instructions below should be used to help in the choosing process.

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

- 1) Either they are in accordance with the fixed Protectors or protective devices mentioned in clause 4/2/1 below.
- 2) Or it is in accordance with the (locked) moving protectors mentioned in clause 4/2/2 below.

However, mobile (locked) protectors should be used when repeated access is assumed.

### **3/3/6 Transferring Parts Connected to the Process**

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

- A) Either they are in accordance with the fixed protectors mentioned in clause 4/2/1 below.
- B) Or according to the interlocking moving protectors mentioned in clause 4/2/2 below.
- C) Or according to 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 must 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) Protectors are adjustable according to what is mentioned in clause 4/2/2 below, in order to prevent access to the moving parts connected to the moving operation when accessing them.

### **3/3/7 Risks of Uncontrolled Movements**

When stopping any part of the machine, the machine must stop completely, and this should not pose any danger.

## **4 Characteristics Required for Operator Protection Devices and Protection Devices**

### **4/1 General Requirements**



#### **4/1/1 Protectors and protection devices shall have the following characteristics:**

- A) A solid structure.
- B) Installed securely.
- 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 danger area.
- F) Not hindering production processes.
- G) Enables 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 must work - whenever possible - to protect against flying or falling objects or materials, as well as protection from emissions resulting from operating machinery.

#### **4/2 Requirements for Special Protective Devices**

##### **4/2/1 Fixed Protective Devices**

- A) Fixed covers 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 machines - are part of the equipment structure, they are not considered protective devices.
- B) Ensure 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 machines when removing the protective devices whenever possible.
- D) Wherever possible the protective devices shall not be placed without their fixation devices.

##### **4/2/2 Interlocking Moving Guards**

- A) Interlocking moving guards shall:
  - 1) When opened, remain connected to the machine whenever possible.
  - 2) Be design and installed in a way that can only be modified with an approved procedure.
  - 3) The interlocking moving protection devices must be connected to an interlock device that:
    - Prevent dangerous machine functions from starting until protective devices are turned off.
    - Issue a stop order when the protective devices are not closed.



- B) Whenever the operator is able to reach the danger area before the hazardous functions are stopped, the moving guards must be connected to the protective locking device, in addition to the interlock device that:
- Prevents the start of dangerous machinery functions until the protective device is closed and sealed.
  - Maintains the protection device closed until the risk of injury resulting from the dangerous functions of the machine is eliminated.
- C) Moving protection devices must 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) Adjusted manually or automatically according to the type of work.
- B) Quickly adjustable without using tools.

#### 4/2/4 Special Requirements for Protection Devices

- A) The protection devices must 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) Individuals 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 damaged.
- B) The adjustable protection devices must be modified by a specified procedure.

### 5 Risks Arising from Other Accidents

#### 5/1 Power Supply

- A) The machine connected to the electrical current must be designed, installed and equipped in such a way as to prevent the occurrence of hazards of an electrical nature.
- B) The machines must meet the safety requirements stipulated in the Technical Regulations 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 Energy Supplies

When a machine is supplied with a source of energy other than electricity, it must 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 danger. However, the occurrence of that due to the way these parts are designed and configured is considered unacceptable, sufficient instructional information must be placed on these parts or on their packages, (The same instructional information must be placed on the moving parts and special boxes in a way that shows movement directions to avoid the occurrence of hazards.

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

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

#### **5/5 Maximum Temperature**

5/5/1 Special precautions must be taken to prevent the risk of injury resulting from the operator touching or approaching parts of machines 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 Fire**

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

#### **5/7 Explosions**

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

The machines must meet - whenever there is a risk of explosion as a result of using the machines - 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 machines must 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 resources, and the providing of tools 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 machines.

### **5/9 Vibrations**

5/9/1 The machines must 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 machines.

### **5/10 Radiation**

5/10/1 Unwanted emissions of radiation must 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 must 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 taken into consideration:

- A) The laser equipment in the machines must be designed and installed in such a way as to prevent the sudden emission of radiation.
- B) The laser equipment in the machines 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 machines 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 - must 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 discharge devices must be installed in such a way as to achieve maximum effect, when the process cannot be fully contained during normal operation of the machine.

5/13 Risks of restricting the movement of people inside machines.



Machines must be designed, and installed in such a way that parts of the body are not jammed inside them, and if this occurs, a way to seek help must be provided.

#### **5/14 Risks of Slipping, Being Trapped or Falling**

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

5/14/2 These parts must 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**

Machines that need protection from the impact of lightning strikes - while using them - must be equipped with a special system for discharging these 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 must not exceed the level affecting the operation of radios or wired and wireless communication equipment or other equipment as required.

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

### **6 Maintenance**

#### **6/1 Maintenance of Machines**

6/1/1 The areas of adjustment and maintenance shall be located outside the danger areas, it must also be able to carry out adjustment, maintenance, repair and cleaning operations in the time the machines stop working.

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

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

6/1/4 The components of the automated machines that need to be changed frequently must 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 Operating Modes and Service Points**

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

## **6/3 Isolation of Energy Sources**

6/3/1 Machines must be provided with special elements to isolate them from all sources of energy, and these insulators should be clearly identified, and they must be lockable whenever the reconnection poses a danger to individuals, and for these insulators to be lockable, whenever the operator is unable - from any area that can be accessed - 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 the operator verifies 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 danger.

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 this case, exceptional precautions must be taken to ensure operator safety.

## **6/4 Operator Interference**

Machines shall be designed and equipped in such a way as to allow minimal operator intervention, and if the operator is required to intervene, this should be done easily and safely.

## **6/5 Cleaning the Internal Parts**

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

## **7 Information**

### **7/1 Information and Warnings on the Machine**

It is preferable to place informative information and warnings on the machine in the form of symbols or illustrations that are easy to understand. 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 Means of Communicating Information**

to



- A) The necessary information that facilitates the process of controlling the machines must be provided in a clear, simple and easy-to-understand method, and it shall not be abundant nor confusing to 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) Machines shall be equipped with special devices to emit an optical or acoustic signal to warn in times when the health and safety of persons is endangered due to the faults of operating the unsupervised machines.
- B) When machines are equipped with warning devices, their signals must be clear and easy to understand, and the operator-operator must have the ability to verify the efficiency of operation of all warning devices at all times.
- C) The safety colors and signs must be adhered to in accordance with the relevant standards.

#### **7/1/3 Warning of residual risks**

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

#### **7/1/4 Marking Machines**

- A) All machines must be clearly marked, legible, and non-removable, and the following minimum criteria must be applied:
  - 1) The trade name and full address of the manufacturer and official representative - if applicable.
  - 2) Naming machines.
  - 3) Designation 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) Signs designated for this must be placed on machines - designed for use in environments prone to explosions.
- D) The machines must carry 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 machines or part of them manually during normal use, and the mass of the machine or the 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 must be clear and legible.

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

### **7/1/5 Instruction Manual**

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

#### **A) General principles for formulating instructions.**

- 1) The instructions must be written in Arabic or in English.
- 2) The instruction manual attached to the machine must 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 must provide a translated version into the required languages. The translated instructions must also be placed on the front cover and referred to as "Translating the instructions from the original language into Arabic or English, Translation must be accompanied by all original instructions.
- 3) In the case of machines prepared for use by non-professional operators, the instructions must be formulated in a manner that takes into account the general education and level of understanding of the operators.

#### **B) Contents of instruction manual**

This instruction manual should contain - whenever necessary - the following minimum information:

- 1) Trade name and full address of the manufacturer and official representative.
- 2) Naming the machines as specified on them, with the exception of the serial number.
- 3) The manufacturer's declaration of conformity.
- 4) General description of the machines.
- 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 premises to be operated by the potential operators.
- 7) Describe the intended use of the machines.
- 8) Warnings about the methods in which the machines shall not be used, whenever experiments have shown that the machines can be used in the wrong ways.

*to*



- 9) Assembly, installation, and wiring instructions, including diagrams, structural installation methods or machinery fixing devices.
- 10) Instructions for assembly and installation, for reducing noise and vibration.
- 11) Instructions for the methods of using machines and, if necessary, instructions for training operators.
- 12) Information regarding hazards that remain in place despite safety precautions inherent in the design and complementary preventive and protective measures in place.
- 13) Instructions for the preventive measures that the user should take, including personal protective equipment that should be provided if required.
- 14) Basic properties of tools that can be used with machines.
- 15) Conditions in which machines 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 process, taking into account the size of the machines 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 must include procedures to remove the blockage safely.
- 18) A description of the maintenance and modification processes that the user should follow, along with the preventive measures that shall be noted.
- 19) Instructions for safely performing necessary adjustments and maintenance, including precautions to be taken while performing such operations.
- 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 (20) or (135) dB, In normal use, a warning must be provided stating that the operator's exposure to noise depends on the environment in which the equipment is used. It must 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 machines may emit non-ionizing 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 by the operator and persons at risk.

### C) Sales documents

Sales documents describing the machines shall not conflict with guidance on health and safety aspects, and the documentation describing the performance features of the machines shall contain the same information on vibration and noise emissions as described 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:

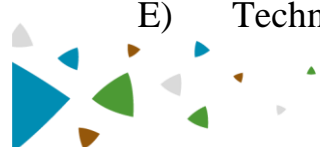
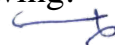
- A) Examination of a representative sample of the entire product, that represent the expected production (production model).
- B) Assessment of the conformity of the technical design of the product by auditing the relevant technical documentation and manuals (design model), and examining of a representative 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 official papers.*

#### 1) Supplier Data

- Name: .....
- Address: .....
- .....
- Contact Person: .....
- Email: .....
- Phone: .....
- Fax: .....

#### 2) Product Details

- Trademark: .....
- Type:.....
- Product Description:.....
- Class (according to standards): .....
- Reference standards / Technical specification: .....

.....

We declare that the product referred to herein is in compliance with SASO Technical Regulation ( ) and the SASO Standards attached to it.

Person in Charge: .....

Company:.....

Signature: ..... Date:.../ .../ ...

