

**Technical Construction File (TCF)**

**File No.**

**HQ-150803**

According to  
Machinery Directive (2006/42/EC)  
Low Voltage Directive (2014/35/EU)

Related to the

Vacuum Packing Machine

**Model:** DZ-260/PD, DZ-300/PD, DZ-400/ZT, DZ-450/ZT, DZ-500/ZT, DZ-400/2E,  
DZ-450/2E, DZ-500/2E, DZ-600/2E, DZ-400/2D, DZ-450/2D, DZ-500/2D,  
DZ-600/2D, DZ-800/2L, DZ-900/2L, DZ-1000/2L, DZ-1100/2L, DZ-400/2SB,  
DZ-500/2SB, DZ-600/2SB, DZ-700/2SB, DZ-800/2SB, DZ-400/2SA, DZ-500/2SA,  
DZ-600/2SA, DZ-700/2SA, DZ-800/2SA, DZ-650/4SB, DZW-600/4SB, DZA-600/2SB

Presented by

Wenzhou Huaqiao Packing Machine Factory  
No. 15 Gangfu Road, Konggang New Area, Wenzhou, Zhejiang, China

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## **General information**

## General Information

Applicant	Wenzhou Huaqiao Packing Machine Factory No. 15 Gangfu Road, Konggang New Area, Wenzhou, Zhejiang, China
Manufacturer	Wenzhou Huaqiao Packing Machine Factory No. 15 Gangfu Road, Konggang New Area, Wenzhou, Zhejiang, China
Trademark	N/A
Product	Vacuum Packing Machine
Model No.	DZ-260/PD, DZ-300/PD, DZ-400/ZT, DZ-450/ZT, DZ-500/ZT, DZ-400/2E, DZ-450/2E, DZ-500/2E, DZ-600/2E, DZ-400/2D, DZ-450/2D, DZ-500/2D, DZ-600/2D, DZ-800/2L, DZ-900/2L, DZ-1000/2L, DZ-1100/2L, DZ-400/2SB, DZ-500/2SB, DZ-600/2SB, DZ-700/2SB, DZ-800/2SB, DZ-400/2SA, DZ-500/2SA, DZ-600/2SA, DZ-700/2SA, DZ-800/2SA, DZ-650/4SB, DZW-600/4SB, DZA-600/2SB
Rated Voltage	AC110V/220V
Rated Frequency	50HZ/60HZ
Specifications	See the Specification tables listed in Annex A.2
Equipment Mobility	Stationary
Duty Cycle	Continuous
File No.	HQ-150803
Issued Date	Sep.28,2022

## **Part I : General**

1.1 General description

1.2 The certificate of relevant components

1.3 Applicable standard

## 1.1 General description

## General Description

Model DZ400/500 series vacuum machine works in a brand-new way that it makes the inside of the bag vacuum and then seals it at once, and just because of the high vacuum, extremely less air is left in the bag, resulting in restraining the propagation of bacterium etc. microbe, avoiding the goods being mildew and rotten by oxidation and, at the same time, some spongy goods can be made reduced in the volume after being vacuum packed and thus become easy to transport and store.

## 1.2 The certificate of relevant components



We CHINT Group Corporation

(supplier's name)

CHINT Building, Liushi Industrial Zone, Wenzhou 325604 P.R. China

(address)

declare under our sole responsibility that the product

Miniature Circuit Breakers (MCB) DZ47-60

(name, type of model, lot, batch or serial number, possibly sources and numbers of items)

to which this declaration relates is in conformity with  
the following standard(s) or other normative document(s)

EN60898/1991+A1:1991+A11:1994+A12:1995+A13:1995+A15+1A16

(title and/or number and date of issue of the standard(s) or other normative document(s))

(If applicable)

following the provisions of Council Directive

89/336+93/68+73/23/EEC (+93/68/EEC) and its amended version

Wenzhou 325604 P.R. China

December 10, 2001

(Place and date of issue)



Jin Xin

(Name and signature of equivalent marking of authorised person)

# CHINT DECLARATION OF CONFORMITY

We CHINT Group Corporation

(supplier's name)

CHINT Building, Liushi Industrial Zone, Wenzhou 325604 P.R.China

(address)

declare under our sole responsibility that the product

Ac contactor, Model: CJX2 series, rated current 9A up to 95A

(name, type of model, list, batch or serial number, quantity sources and numbers of items)

to which this declaration relates is in conformity with  
the following standard(s) or other normative document(s)

IEC 60947-4-1, GB14048.4-1993

(title and/or number and date of issue of the standard(s) or other normative document(s))

(If applicable)

following the provisions of Council Directive

89/336+93/68+73/23/EEC (+93/68/EEC) and its amended version

Wenzhou 325604 P.R.China

August, 7, 2001

(Place and date of issue)



Jin Xin

(Name and signature of equivalent marking of authorized person)



### MANUFACTURER'S DECLARATION OF CONFORMITY

PRODUCT & TECHNOLOGY  
Automation & Safety  
Machine Control Department

We : SCHNEIDER ELECTRIC INDUSTRIES SAS  
89, Boulevard Franklin Roosevelt  
92500 Rueil Malmaison  
FRANCE

declare under our own responsibility that the product(s):

TRADEMARK : TELEMECANIQUE

NAME, TYPE : *Limit switches*  
MODELS : XCK-A/B/D/J/L/M/N/P/S/T, XCL, XCE, XCF, XCM, XCB, XCR, XC1, XC2

NAME, TYPE : *Pressure and Vacuum switches*  
MODELS : XML-A/B/C/D/E/F/G/K/T, XMA, X1AX

NAME, TYPE : *Pendant control stations*  
MODELS : XAC-A

NAME, TYPE : *Industrial joystick controllers*  
MODELS : XKB, XKD

to which this declaration refers conform to :

STANDARDS OR NORMATIVE DOCUMENTS :

*Low-voltage switchgear and controlgear,  
General rules  
Electromechanical control circuit devices*

IEC/EN60947-1  
IEC/EN60947-5-1

Subject to installation, maintenance and use conforming to its (their) intended purpose, to the applicable regulations and standards, to the supplier's instructions and to standard practice,

the products conform to the requirements of the applicable European Directives :

*Low-voltage Directive  
EMC Directive*

N° 73/23/EEC  
N° 89/336/EEC

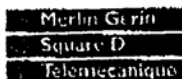
The CE marking on the products and/or their packaging signifies that Schneider Electric holds the reference technical file available to the European Union authorities.

Issued at L'Isle d'Espagnac - FRANCE : October 21, 2004

Authorised Signatory

Name :  
Title :  
Signature :

Andre Borouchaki  
Department Vice President





**ELECTRONIC TECHNOLOGY SYSTEMS  
DR. GENZ GMBH  
COMPETENT BODY / ACCREDITED TEST HOUSE**

## EC DECLARATION OF CONFORMITY

This certifies that the following designated product

**TRANSFORMER  
MODEL NO. : BK-25 SHELL TYPE IRON-CORE TRANSFORMER**

(Product identification)

complies with the essential protection requirements of Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility.

This declaration applies to all specimens manufactured in accordance with the attached manufacturing drawings which form part of this declaration.

Assessment of compliance of the product with the requirements relating to electromagnetic compatibility was based on the following standards:

**EN 50081-1 /1992: EN 55014, EN 61000-3-2/-3,  
EN 50082-1 /1997: EN 55014-2**

(Identification of regulations / standards)

This declaration is the responsibility of the manufacturer / importer

**WENZHOU OUHAI YULONG TRANSFORMER FACTORY  
A4-5, JIANGJUN XINCUN, ,  
WENZHOU CITY, ZHEJIANG, CHINA**

(Name / Address)



THIS DOC IS ONLY VALID IN CONNECTION WITH TEST REPORT NUMBER : G2M20009-0509-E-16

**MANUFACTURER / IMPORTER**

**TEST LABORATORY**

This is the result of test, that was carried out from the submitted type-samples of a product in conformity with the specification of the respective standards. The certificate holder has the right to fix the CE-mark for EMC on the product complying with the inspection sample.

October 09, 2000

(Date)

(Date)

(Surname, forename)  
(Company stamp)

Dr. Genz  
(Company stamp)



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**MITSUBISHI  
ELECTRIC  
CORPORATION  
NAGOYA WORKS**

**MITSUBISHI ELECTRIC CORPORATION  
NAGOYA WORKS**  
ADDRESS: 1-14, YADA-MINAMI 5-CHOME  
HIGASHI-KU, NAGOYA, 461-8670 JAPAN  
TELEPHONE:052-721-2111

## DECLARATION OF CONFORMITY

**[ According to Low Voltage Directive 73/23/EEC  
as last amended by EEC Directive 93/68/EEC ]**

We hereby state the following AC Servo Motors are in conformity with Low Voltage Directive 73/23/EEC and 93/68/EEC.

This is supported by product tests of the following standards.

### Component Description: AC Servo Motor

Type :	HC-MFS series	(50W~750W)
	HC-KFS series	(50W~750W)
	HC-SFS series	(0.5kW~7kW)
	HC-RFS series	(1kW~5kW)
	HC-UFS series	(0.1kW~5kW)

Manufactured by: Mitsubishi Electric Corporation, Nagoya Works

Address: 1-14 Yada-Minami 5-Chome, Higashi-ku  
Nagoya 461-8670, Japan

Standard(s): EN60034-1: 1998+A1+A2

Year of CE marking: 1999

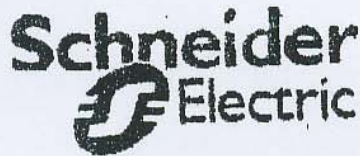
Mitsubishi Electric Corporation

*Mahito Unno*  
Mahito Unno  
Manager  
Servo Drive Systems Department

Issued by:  
Nagoya, 08/DEC/2000

HEAD OFFICE: 2-2-3 MARUNOUCHI CHIYODA-KU, TOKYO 100-8310, JAPAN

BFN-16811-\*



## MANUFACTURER'S DECLARATION OF CONFORMITY

INDUSTRIAL CONTROL BUSINESS UNIT  
Machine Equipment Activity Management

WE : SCHNEIDER ELECTRIC INDUSTRIES SA  
89 Boulevard Franklin Roosevelt  
92500 Rueil Malmaison  
FRANCE

declare under our own responsibility that the product(s):

TRADEMARK : TELEMÉCANIQUE

NAME, TYPE : *Control and signalling units*  
MODELS : XB4-B..., ZB4-B..., XB5-A..., ZB5-A..., XD4-P..., XD5-P...

NAME, TYPE : *Illuminated beacons and indicating banks*  
MODELS : XVB..., XVD..., XVD-LS...

NAME, TYPE : *Control stations*  
MODELS : XAL-D..., XAL-K...

NAME, TYPE : *Electrical blocks*  
MODELS : ZBE..., ZBP..., ZBV..., ZEN-L..., ZAL-V...

to which this declaration refers conform to :

STANDARDS OR NORMATIVE DOCUMENTS :  
*Low-voltage switchgear and controlgear,*  
*General rules* IEC 947-1 (EN60947-1)  
*Electromechanical control circuit devices* IEC/EN60947-5-1

Subject to installation, maintenance and use conforming to its (their) intended purpose, to the applicable regulations and standards, to the supplier's instructions and to standard practice,

the products conform to the requirements of the applicable European Directives :

*Low-voltage Directive* N° 73/23/EEC  
*EMC Directive* N° 89/336/EEC

The CE marking on the products and/or their packaging signifies that Schneider Electric holds the reference technical file available to the European Union authorities.

Issued at Angoulême - FRANCE : February 22 , 2001

Authorised Signatory

Name :  
Title :  
Signature :

J.P.Mura  
Activity Director

### 1.3 Applicable standard

## List of applicable regulations and standards

### Regulations

Machinery Directive (2006/42/EC)

Low Voltage Directive (2014/35/EU)

### Standards

·EN ISO 12100:2010 Safety of Machinery - General Principles For Design - Risk Assessment And Risk Reduction.

·EN 415-5:2006+A1:2009 Safety of packaging machines - Part 5: Wrapping machines.

·EN 60204-1: 2018 Safety of Machinery - Electrical Equipment of Machines - Part 1: General Requirements.



## **Part II : Assessment of conformity**

2.1 Essential health and safety requirements

2.2 ISO 12100 test report

## 2.1 Essential health and safety requirements

Essential health and safety requirements

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Clause	Requirement – test	Result	Verdict
1	Essential health and safety requirements	-	-
1.1	General remarks	-	-
1.1.1	Definitions	-	-
1.1.2	Principles of safety integration	-	-
a)	Machinery must be designed and constructed so that it is fitted for its function, and can be operated, adjusted and maintained without putting persons at risk when these operations are carried out under the conditions foreseen but also taking into account any reasonably foreseeable misuse thereof.	These specified requirements have been complied with.	<b>Pass</b>
	The aim of measures taken must be to eliminate any risk throughout the foreseeable lifetime of the machinery including the phases of transport, assembly, dismantling, disabling and scrapping.	Appropriate measures have been taken to eliminate or reduce those existed risks.	<b>Pass</b>
b)	In selecting the most appropriate methods, the manufacturer must apply the following principles, in the order given;	-	-
	-Eliminate or reduce risks as far as possible;	The measures have been taken to eliminate or reduce risks as far as possible.	<b>Pass</b>
	- Take the necessary protective measures in relation to risks that can't be eliminated;	Appropriate guards and warning signs are used.	<b>Pass</b>
	- Inform users of the residual risks due to any shortcomings of the protection measures adopted, indicate whether any particular training is required and specify any need to provide personal protection equipment.	The related safety information for the users to operate the machine has been included in the instruction manual.	<b>Pass</b>
c)	When designing and constructing machinery and when drafting the instructions, the manufacturer or his authorized representative must envisage not only the intended use of the machinery but also any reasonably foreseeable misuse thereof.	All safety principles have been taken into account as far as possible during the design of these machines.	<b>Pass</b>
	The machinery must be designed and constructed in such a way as to prevent abnormal use if such use would engender a risk. Where appropriate, the instructions must draw the user's attention to ways which experience has shown might occur - in which the machinery should not be used.	These requirements have been complied with, and the related information also has been provided within the instruction manual.	<b>Pass</b>
d)	Machinery must be designed and constructed to take account of the constraints to which the operator is subject as a result of the necessary or	These requirements have been taken into account during the design of this machine.	<b>Pass</b>

Clause	Requirement – test	Result	Verdict
	foreseeable use of personal protective equipment.		
e)	When designing and constructing machinery, the manufacturer must taken account of the constraints to which the operator is subject as a result of the necessary or foreseeable use of personal protection equipment.	Suitable instructions for the use personal protection equipment are indicated in the instruction manual.	<b>Pass</b>
f)	Machinery must be supplied with all the essential special equipment and accessories to enable it to be adjusted, maintained and used without risk.	These related accessories have been supplied.	<b>Pass</b>
1.1.3	Materials and products	-	-
	The materials used to construct machinery or products used and created during its use must not endanger exposed persons' safety or health	Materials and products cannot endanger exposed person's safety or health.	<b>Pass</b>
	In particular, where fluids are used, machinery must be designed and constructed for use without risks due to filling, use, recovery or draining.	No any fluids has been used.	<b>N/A</b>
1.1.4	Lighting	-	-
	The manufacturer must supply integral lighting suitable for the operations concerned where its lack is likely to cause a risk despite ambient lighting of normal intensity.	No any integral lighting has been used.	<b>N/A</b>
	Machinery must be designed and constructed so that there is no area of shadow likely to cause nuisance, that there is no irritating dazzle and that there are no dangerous stroboscopic effects on moving parts due to the lighting.	No this situation.	<b>N/A</b>
	Internal parts requiring frequent inspection, and adjustment and maintenance areas, must be provided with appropriate lighting.	No this situation.	<b>N/A</b>
1.1.5	Design of machinery to facilitate its handling	-	-
	Machinery or each component part thereof must:	-	-
	- be capable of being handled and transported safely,	All of them are capable of being handled safely.	<b>Pass</b>
	- be packaged or designed so that it can be stored safely and without damage	The machinery can be stored safely and without damage.	<b>Pass</b>
	During the transportation of the machinery and/or its component parts, there must be no possibility of sudden movements or of hazards due to instability as long as the machinery and/or its component parts are handled in accordance with the instructions.	There are no possibility of sudden movements or of hazards due to insability as long as the machinery and/or its component parts are handled.	<b>Pass</b>
	Where the weight, size or shape of machinery or	-	-

Clause	Requirement – test	Result	Verdict
	its various component parts prevents them from being moved by hand, the machinery or each components part must:		
	- Either be fitted with attachments for lifting gear, or	Not applicable.	N/A
	- Be designed so that it can be fitted with such attachments, or	It has been complied with.	Pass
	- Be shaped in such a way that standard lifting gear can easily be attached	Not applicable.	N/A
	Where machinery or one of its component parts is to be moved by hand, it must:	-	-
	- Either be easily movable, or	Not applicable.	N/A
	- Be equipped for picking up and moving in complete safety	Not applicable.	N/A
	Special arrangement must be made for the handling of tools and/or machinery parts, even if lightweight, which could be dangerous.	No this kind of situation.	N/A
1.1.6	Ergonomics	-	-
	Under the intended conditions of use, the discomfort, fatigue and physical and psychological stress faced by the operator must be reduced to the minimum possible, taking into account ergonomic principles such as:	Ergonomic principles have been considered when design.	Pass
	- allowing for the variability of the operator's physical dimensions, strength and stamina,	The requirement has been complied with.	Pass
	- providing enough space for movements of the parts of the operator's body,	The requirement has been complied with.	Pass
	- avoiding a machine-determined work rate,	The requirement has been complied with.	Pass
	- avoiding monitoring that requires lengthy concentration,	The requirement has been complied with.	Pass
	- adapting the man/machinery interface to the foreseeable characteristics of the operators.	The requirement has been complied with.	Pass
1.1.7	Operating positions	-	-
	The operating position must be designed and constructed in such a way as to avoid any risk due to exhaust gases and/or lack of oxygen.	The requirement has been complied with.	Pass
	If the machinery is intended to be used in a hazardous environment presenting risks to the health and safety of the operator or if the machinery itself gives rise to a hazardous environment, adequate means must be provided to ensure that the operator has good working	No this kind of situation.	N/A

Clause	Requirement – test	Result	Verdict
	conditions and is protected against any foreseeable hazards.		
	Where appropriate, the operating position must be fitted with an adequate cabin designed, constructed and/or equipped to fulfill the above requirements. The exit must allow rapid evacuation. Moreover, when applicable, an emergency exit must be provided in a direction which is different from the usual exit.	No this kind of situation.	N/A
1.1.8	Seating	-	-
	Where appropriate and where the working conditions so permit, work stations constituting an integral part of the machinery must be designed for the installation of seats.	No this kind of situation.	N/A
	If the operator is intended to sit during operation and the operating position is an integral part of the machinery, the seat must be provided with the machinery.	No this kind of situation.	N/A
	The operator's seat must enable him to maintain a stable position. Furthermore, the seat and its distance from the control devices must be capable of being adapted to the operator.	No this kind of situation.	N/A
	If the machinery is subject to vibrations, the seat must be designed and constructed in such a way as to reduce the vibrations transmitted to the operator to the lowest level that is reasonably possible. The seat mountings must withstand all stresses to which they can be subjected. Where there is no floor beneath the feet of the operator, footrests covered with a slip-resistant material must be provided.	No this kind of situation.	N/A
1.2	Control systems	-	-
1.2.1	Safety and reliability of control systems	-	-
	Control systems must be designed and constructed so that they are safe and reliable, in a way that will prevent a dangerous situation arising.	All related safe and reliable technologies have been used adequately for these machines.	Pass
	Above all they must be designed and constructed:	-	-
	- They can withstand the rigors of normal use and external influences	The whole control system can withstand the rigors of normal use and external factors.	Pass

Clause	Requirement – test	Result	Verdict
	- a fault in the hardware or the software of the control system does not lead to hazardous situations,	No this kind of situation.	N/A
	- Errors in control system logic don't lead to dangerous situations	Errors in logic don't lead to dangerous situations.	Pass
	- reasonably foreseeable human error during operation does not lead to hazardous situations.	Reasonably foreseeable human error does not lead to hazardous situations	Pass
	Particular attention must be given to the following points:	-	-
	- the machinery must not start unexpectedly,	The machinery cannot start unexpectedly.	Pass
	- the parameters of the machinery must not change in an uncontrolled way, where such change may lead to hazardous situations,	The parameters of the machinery can not change in an uncontrolled way	Pass
	- the machinery must not be prevented from stopping if the stop command has already been given,	The machinery cannot be prevented from stopping when the stop command has already been given.	Pass
	- no moving part of the machinery or piece held by the machinery must fall or be ejected,	no moving part of the machinery or piece held by the machinery must fall or be ejected,	Pass
	- automatic or manual stopping of the moving parts, whatever they may be, must be unimpeded,	Any stopping can not be unimpeded.	Pass
	- the protective devices must remain fully effective or give a stop command,	The protective devices is remain fully effective.	Pass
	- the safety-related parts of the control system must apply in a coherent way to the whole of an assembly of machinery and/or partly completed machinery.	The safety-related parts of the control system has been apply in a coherent way	Pass
	For cable-less control, an automatic stop must be activated when correct control signals are not received, including loss of communication.	The automatic stop has been activated.	Pass
1.2.2	Control devices	-	-
	Control devices must be:	-	-
	- clearly visible and identifiable, using pictograms where appropriate,	It has been complied with.	Pass
	- positioned in such a way as to be safely operated without hesitation or loss of time and without ambiguity,	Suitable position for each control device has been taken.	Pass
	- Designed so that the movement of the control is consistent with its effect	The movement of the control is consistent with its effect.	Pass
	- located outside the danger zones, except where necessary for certain control devices such as an emergency stop or a teach pendant,	They are located outside the danger zones.	Pass

Essential health and safety requirements

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Clause	Requirement – test	Result	Verdict
	- Positioned so that their operation can't cause additional risk	Suitable position for each control device has been taken.	<b>Pass</b>
	- designed or protected in such a way that the desired effect, where a hazard is involved, can only be achieved by a deliberate action,	Designed and protected can only be achieved by a deliberate action.	<b>Pass</b>
	- made in such a way as to withstand foreseeable forces; particular attention must be paid to emergency stop devices liable to be subjected to considerable forces.	All of them can withstand foreseeable strain.	<b>Pass</b>
	Where a control is designed and constructed to perform several different actions, namely where there is no one-to-one correspondence, the action to be performed must be clearly displayed and subject to confirmation where necessary.	No this situation,	<b>N/A</b>
	Controls devices must be so arranged that their layout, travel and resistance to operation are compatible with the action to be performed, taking account of ergonomic principles	All control devices have been arranged adequately and taking account of ergonomic principles.	<b>Pass</b>
	Constraints due to the necessary foreseeable use of personal protection equipment must be taken into account	This kind of situation doesn't exist.	<b>Pass</b>
	Machinery must be fitted with indicators as required for safe operation	This requirement has been complied with.	<b>Pass</b>
	The operator must be able to read them from the control position	They can be read from the control position.	<b>Pass</b>
	From each control position, the operator must be able to ensure that no-one is in the danger zones, or the control system must be designed and constructed in such a way that starting is prevented while someone is in the danger zone.	The operator can be able to ensure the no-one is in the danger zones from the control position.	<b>Pass</b>
	If neither of these possibilities is applicable, before the machinery starts, an acoustic and/or visual warning signal must be given. The exposed persons must have time to leave the danger zone or prevent the machinery starting up.	An acoustic and visual warning signal device has been used.	<b>Pass</b>
	If necessary, means must be provided to ensure that the machinery can be controlled only from control positions located in one or more predetermined zones or locations.	Emergency stop switch can be used to prevent the machine starting up.	<b>Pass</b>
	Where there is more than one control position, the control system must be designed in such a way that the use of one of them precludes the use	Just one control position.	<b>N/A</b>



Clause	Requirement – test	Result	Verdict
	of the others, except for stop controls and emergency stops.		
	When machinery has two or more operating positions, each position must be provided with all the required control devices without the operators hindering or putting each other into a hazardous situation.	Just one control position.	N/A
1.2.3	Starting	-	-
	It must be possible to start machinery only by voluntary actuation of a control provided for the purpose	These machines shall be started only by voluntary actuation of a control.	Pass
	The same requirement applies:	-	-
	- When restarting the machinery after stoppage, whatever the cause	The same requirement is applied.	Pass
	- When effecting a significant change in the operating conditions	The same requirement is applied.	Pass
	However, the restarting of the machinery or a change in operating conditions may be effected by voluntary actuation of a device other than the control device provided for the purpose, on condition that this does not lead to a hazardous situation.	Not applicable.	N/A
	For machinery functioning in automatic mode, the starting of the machinery, restarting after a stoppage, or a change in operating conditions may be possible without intervention, provided this does not lead to a hazardous situation.	Not applicable.	N/A
	Where machinery has several starting control devices and the operators can therefore put each other in danger, additional devices must be fitted to rule out such risks. If safety requires that starting and/or stopping must be performed in a specific sequence, there must be devices which ensure that these operations are performed in the correct order.	Not applicable.	N/A
1.2.4	Stopping	-	-
1.2.4.1	Normal stopping	-	-
	Each machine must be fitted with a control whereby the machine can be brought safely to a complete stop	The normal stopping devices have been used for these machines.	Pass
	Each workstation must be fitted with a control to stop some or all of the moving parts of the	Workstation has fitted with a normal stopping device.	Pass

Clause	Requirement – test	Result	Verdict
	machinery, depending on the type of hazard, so that the machinery is rendered safe		
	The machinery's stop control must have priority over the start controls	They have priority over the start controls.	<b>Pass</b>
	Once the machinery or its dangerous parts have stopped, the energy supply to the actuators concerned must be cut off	The energy supply has been cut off after the machine is stopped.	<b>Pass</b>
1.2.4.2	Operational stop	-	-
	Where, for operational reasons, a stop control that does not cut off the energy supply to the actuators is required, the stop condition must be monitored and maintained.	No this situation.	<b>N/A</b>
1.2.4.3	Emergency stop	-	-
	machinery must be fitted with one or more emergency stop devices to enable actual or impending danger to be averted	The machine has fitted with emergency stop device.	<b>Pass</b>
	The following exceptions apply:	-	-
	- Machines in which an emergency stop device would not lessen the risk, either because it would not reduce the stopping time or because it would not enable the special measures required to deal with the risk to be taken	Not applicable.	<b>N/A</b>
	- Hand-held portable machines and hand-guided machines	Not applicable.	<b>N/A</b>
	The emergency stop device must:	-	-
	- Have clearly identifiable, clearly visible and quickly accessible controls	They are identifiable, clearly visible and quickly accessible controls.	<b>Pass</b>
	- Stop the dangerous process as quickly as possible, without creating additional hazards	They can stop the dangerous process as quickly as possible, without creating additional hazards.	<b>Pass</b>
	- Where necessary, trigger or permit the triggering of certain safeguard movements	No this kind of application	<b>N/A</b>
	Once active operation of the emergency stop control has ceased following a stop command, that command must be sustained by engagement of the emergency stop device until that engagement is specifically overridden	This requirement has been complied with.	<b>Pass</b>
	It must be possible to disengage the device only by an appropriate operation, and disengaging the device must not restart the machinery but only permit restarting	These specified requirements have been complied with.	<b>Pass</b>
	The emergency stop function must be available	This requirement has been complied with.	<b>Pass</b>

Clause	Requirement – test	Result	Verdict
	and operational at all times, regardless of the operating mode.		
	Emergency stop devices must be a back-up to other safeguarding measures and not a substitute for them.	This requirement has been complied with.	<b>Pass</b>
1.2.4.4	Complex installations	-	-
	In the case of machinery or parts of machinery designed to work together, must so design and construct the machinery that the stop controls, including the emergency stop, can stop not only the machinery itself but also all equipment upstream and/or downstream if its continued operation can be dangerous	This requirement has been complied with.	<b>Pass</b>
1.2.5	Mode selection	-	-
	The control mode selected must override all other control systems with the exception of the emergency stop	The control mode of selection can override all other control systems with the exception of the emergency stop.	<b>Pass</b>
	If machinery has been designed and built to allow for its use in several control or operating modes presenting different safety levels, it must be fitted with a mode selector which can be locked in each position	Not applicable.	<b>N/A</b>
	Each position of the selector must correspond to a single operating or control mode	Each of them is corresponding to a single operating or control mode.	<b>Pass</b>
	The selector may be replaced by another selection method which restricts the use of certain functions of the machinery to certain categories of operator	No this kind of application.	<b>N/A</b>
	If, for certain operations, the machinery must be able to operate with its protection devices neutralized, the mode selector must simultaneously:	No this kind of application.	<b>N/A</b>
	- disable all other control or operating modes,	Not applicable.	<b>N/A</b>
	- Permit movements only by controls requiring sustained action	Not applicable.	<b>N/A</b>
	- Permit the operation of dangerous moving parts only in enhanced safety conditions while preventing hazards from linked sequences	Not applicable.	<b>N/A</b>
	- Prevent any movement liable to pose a danger by acting voluntarily or involuntarily on the machine's internal sensors	Not applicable.	<b>N/A</b>
	If these four conditions cannot be fulfilled	This requirement has been complied with.	<b>Pass</b>

Clause	Requirement – test	Result	Verdict
	simultaneously, the control or operating mode selector must activate other protective measures designed and constructed to ensure a safe intervention zone.		
	In addition, the operator must be able to control operation of the parts he is working on at the adjustment point.	Not applicable.	N/A
1.2.6	Failure of the power supply	-	-
	The interruption, re-establishment after an interruption or fluctuation in whatever manner of the power supply to the machinery must not lead to a dangerous situation	No risk is generated from these accidental situations.	Pass
	In particular:	-	-
	- The machinery must not start unexpectedly	It doesn't start unexpectedly.	Pass
	- the parameters of the machinery must not change in an uncontrolled way when such change can lead to hazardous situations,	the parameters of the machinery will not change in an uncontrolled way	Pass
	- The machinery must not be prevented from stopping if the command has already been given	This requirement has been complied with.	Pass
	- No moving part of the machinery or piece held by the machinery must fall or be ejected	This clause has been met.	Pass
	- Automatic or manual stopping of the moving parts whatever they must be unimpeded	This requirement has been complied with.	Pass
	- The protection devices must remain fully effective	All protection devices can remain effective fully.	Pass
1.2.7	Failure of the control circuit	-	-
	A fault in the control circuit, or failure of or damage to the control circuit must not lead to dangerous situations	The failure of the control circuit will not lead to dangerous situations.	Pass
	In particular:	-	-
	- The machinery must not start unexpectedly	It doesn't start unexpectedly.	Pass
	- The machinery must not be prevented from stopping if the command has already been given	This requirement has been complied with.	Pass
	- No moving part of the machinery or piece held by the machinery must fall or be ejected	No part will fall or be ejected.	Pass
	- Automatic or manual stopping of the moving parts whatever they may be must be unimpeded	This requirement has been complied with.	Pass
	- The protection device must remain fully effective	All of protection devices can remain effective fully.	Pass
1.2.8	Software	-	-
	Interactive software between the operator and the command or control system of a machine must	Not applicable.	N/A

Clause	Requirement – test	Result	Verdict
	be user-friendly		
1.3	Protection against mechanical hazards	-	-
1.3.1	Risk of loss of stability	-	-
	Machinery, components and fittings thereof must be so designed and constructed that they are stable enough, under the foreseen operating conditions for use without risk of overturning, falling or unexpected movement	The stability of machines, components and fittings has been taken into consideration.	<b>Pass</b>
	If the shape of the machinery itself or its intended installation doesn't offer sufficient stability, appropriate means of anchorage must be incorporated and indicated in the instructions	Not applicable.	<b>N/A</b>
1.3.2	Risk of break-up during operation	-	-
	The various parts of machinery and their linkages must be able to withstand the stress to which they are subject when used as foreseen by the manufacturer	All parts used can withstand sufficient stress for working.	<b>Pass</b>
	The durability of the materials used must be adequate for the nature of the workplace foreseen by the manufacturer, in particular as regards the phenomena of fatigue, aging, corrosion and abrasion	All materials used have adequate durability.	<b>Pass</b>
	The manufacturer must indicate in the instructions the type and frequency of inspection and maintenance required for safety reasons, where appropriate, indicate the parts subject to wear and the criteria for replacement	This information in relation to inspection and maintenance etc. are indicated in the instruction manual.	<b>Pass</b>
	Where a risk of rupture or disintegration remains despite the measures taken the moving parts must be mounted and positioned in such a way that in case of rupture their fragments will be contained	No this kind of situation.	<b>N/A</b>
	Both rigid and flexible pipes carrying fluids, particularly those under high pressure, must be able to withstand the foreseen internal and external stresses and must be firmly attached and/or protected against all manner of external stresses and strains; precaution must be taken to ensure that no risk is posed by a rupture	No this kind of situation.	<b>N/A</b>
	Where the material to be processed is fed to the tool automatically, the following conditions must be fulfilled to avoid risks to the persons exposed:	-	-
	- When the work piece comes into contact with	This requirement has been complied with.	<b>Pass</b>

Clause	Requirement – test	Result	Verdict
	the tool the later must have attained its normal working conditions		
	- When the tool starts and/or stops the feed movement and the tool movement must be coordinated	This requirement has been complied with.	<b>Pass</b>
1.3.3	Risks due to falling or ejected objects	-	-
	Precautions must be taken to prevent risks from falling or ejected objects	No this kind of risk.	<b>N/A</b>
1.3.4	Risks due to surfaces, edges or angles	-	-
	In so far as their purpose allows, accessible parts of the machinery must have no sharp edges, no sharp angles, and no rough surfaces likely to cause injury	All parts have been processed carefully so that they have no sharp edges, no sharp angles, and no rough surfaces likely to cause injury.	<b>Pass</b>
1.3.5	Risks related to combined machinery	-	-
	Where the machinery is intended to carry out several different operations with the manual removal of the piece between each operation, it must be designed and constructed in such a way as to enable each element to be used separately without the other elements constituting a danger or risk for the exposed person	No risk is generated from that situation for the exposed person.	<b>Pass</b>
	For this purpose, it must be possible to start and stop separately and elements that are not protected	Not applicable.	<b>N/A</b>
1.3.6	Risks relating to variations in operating conditions	-	-
	Where the machinery performs operations under different conditions of use, it must be designed and constructed in such a way that selection and adjustment of these conditions can be carried out safely and reliably	The machinery can be operated safely and reliably under different conditions of use.	<b>Pass</b>
1.3.7	Prevention of risks related to moving parts	-	-
	The moving parts of machinery must be designed, built and laid out to avoid hazards or, where hazards persist, fixed with guards or protective devices in such a way as to prevent all risk of contact which could lead to accidents	Appropriate protective guards have been fitted to avoid hazards.	<b>Pass</b>
	All necessary steps must be taken to prevent accidental blockage of moving parts involved in the work	Appropriate protective guards have been taken to avoid hazards.	<b>Pass</b>
	In cases where, despite the precautions taken, a blockage is likely to occur, specific protection	No this kind of risk situation.	<b>N/A</b>

Clause	Requirement – test	Result	Verdict
	devices or tools, the instruction handbook and possibly a sign on the machinery should be provided by the manufacturer to enable the equipment to be safely unblocked		
	The instructions and, where possible, a sign on the machinery shall identify these specific protective devices and how they are to be used.	No this contained.	<b>N/A</b>
1.3.8	Choice of protection against risks arising from moving parts	-	-
	Guards or protection devices used to protect against the risks related to moving parts must be selected on the basis of the type of risk	Guards or protection devices have been used appropriately.	<b>Pass</b>
	The following guidelines must be used to help make the choice	-	-
1.3.8.1	Moving transmission parts	-	-
	Guards designed to protect exposed persons against the risks associated with moving transmission parts must be:	-	-
	- Either fixed, complying with requirements 1.4.1 and 1.4.2.1 or	The fixed guards are used.	<b>Pass</b>
	- Interlocking movable guards as referred to in section 1.4.2.2.	No this situation.	<b>N/A</b>
	Interlocking movable guards should be used where frequent access is envisaged.	No this situation.	<b>N/A</b>
1.3.8.2	Moving parts involved in the process	-	-
	guards or protection devices designed to protect exposed persons against the risks associated with moving parts contributing to the work must be:	-	-
	- either fixed guards complying with requirements 1.4.1 and 1.4.2.1	fixed guards complying with requirements 1.4.1 and 1.4.2.1	<b>Pass</b>
	- interlocking movable guards as referred to in section 1.4.2.2, or	No this situation.	<b>N/A</b>
	- protective devices as referred to in section 1.4.3, or	No this situation.	<b>N/A</b>
	- a combination of the above.	No this situation.	<b>N/A</b>
	However, when certain moving parts directly involved in the process can't be made completely or partially inaccessible during operation owing to operations requiring near-by operator intervention, where technically possible such parts must be fitted with:	-	-
	- fixed guards or interlocking movable guards	Not applicable.	<b>N/A</b>

Clause	Requirement – test	Result	Verdict
	preventing access to those sections of the parts that are not used in the work, and		
	- adjustable guards as referred to in section 1.4.2.3 restricting access to those sections of the moving parts where access is necessary.	Not applicable.	N/A
1.3.9	Risks of uncontrolled movements	-	-
	When a part of the machinery has been stopped, any drift away from the stopping position, for whatever reason other than action on the control devices, must be prevented or must be such that it does not present a hazard.	The requirement has been complied with.	Pass
1.4	Required characteristics of guards and protection devices	-	-
1.4.1	General requirement	-	-
	Guards and protection devices must:	-	-
	- Be of robust construction	They are of robust construction.	Pass
	- be securely held in place,	be securely held in place,	Pass
	- Not give rise to any additional risk	No additional risk is generated.	Pass
	- Not be easy to bypass or render non-operational	They cannot be easy to bypass or render non-operational.	Pass
	- Be located at an adequate distance from the danger zone	Appropriate safety distances according to EN ISO13857 has been complied with.	Pass
	- Cause minimum obstruction to the view of the production process	This requirement has been complied with.	Pass
	- Enable essential work to be carried out on the installation and/or replacement of tools and for maintenance purposes by restricting access exclusively to the area where the work has to be done, if possible without the guard having to be removed or the protective device having to be disabled.	These requirements have been taken into account during the design of the protection devices.	Pass
	In addition, guards must, where possible, protect against the ejection or falling of materials or objects and against emissions generated by the machinery.	No this situation.	N/A
1.4.2	Special requirements for guards	-	-
1.4.2.1	Fixed guards	-	-
	Fixed guards must be fixed by systems that can be opened or removed only with tools.	They are held securely in place.	Pass
	Their fixing systems must remain attached to the guards or to the machinery when the guards are removed.	They can be opened only with tools.	Pass



Clause	Requirement – test	Result	Verdict
	Where possible, guards must be unable to remain in place without their fixings	Guards are unable to remain in place without their fixings	<b>Pass</b>
1.4.2.2	Interlocking movable guards	-	-
	Interlocking movable guards must:	-	-
	- As far as possible remain fixed to the machinery when open	Not applicable.	<b>N/A</b>
	- be designed and constructed in such a way that they can be adjusted only by means of an intentional action.	Not applicable.	<b>N/A</b>
	Interlocking movable guards must be associated with an interlocking device that:	-	-
	- prevents the start of hazardous machinery functions until they are closed and	This kind of situation doesn't exist.	<b>N/A</b>
	- gives a stop command whenever they are no longer closed.	This kind of situation doesn't exist.	<b>N/A</b>
	Where it is possible for an operator to reach the danger zone before the risk due to the hazardous machinery functions has ceased, movable guards must be associated with a guard locking device in addition to an interlocking device that:	This kind of situation doesn't exist.	<b>N/A</b>
	- prevents the start of hazardous machinery functions until the guard is closed and locked, and	This kind of situation doesn't exist.	<b>N/A</b>
	- keeps the guard closed and locked until the risk of injury from the hazardous machinery functions has ceased.	This kind of situation doesn't exist.	<b>N/A</b>
	Interlocking movable guards must be designed in such a way that the absence or failure of one of their components prevents starting or stops the hazardous machinery functions.	This kind of situation doesn't exist.	<b>N/A</b>
1.4.2.3	Adjustable guards restricting access	-	-
	Adjustable guards restricting access to those areas of the moving parts strictly necessary for the work must:	No adjustable guard has been used.	<b>N/A</b>
	- Be adjustable manually or automatically according to the type of work involved	Not applicable.	<b>N/A</b>
	- Be readily adjustable without the use of tools	Not applicable.	<b>N/A</b>
1.4.3	Special requirements for protection devices	-	-
	Protection devices must be designed and incorporated into the control system so that:	-	-
	- Moving parts can't start up while they are within the operator's reach	Not applicable.	<b>N/A</b>

Clause	Requirement – test	Result	Verdict
	- persons cannot reach moving parts while the parts are moving, and	Not applicable.	N/A
	- The absence or failure of one of their components prevents starting or stops the moving parts	Not applicable.	N/A
	Protective devices must be adjustable only by means of an intentional action.	Not applicable.	N/A
1.5	Protection against other hazards	-	-
1.5.1	Electricity supply	-	-
	Where machinery has an electricity supply it must be designed, constructed and equipped so that all hazards of an electrical nature are or can be prevented	Appropriate protections have been taken.	Pass
	The safety objectives set out in Directive 2006/95/EC shall apply to machinery. However, the obligations concerning conformity assessment and the placing on the market and/or putting into service of machinery with regard to electrical hazards are governed solely by this Directive.	This requirement has been complied with.	Pass
1.5.2	Static electricity	-	-
	Machinery must be so designed and constructed as to prevent or limit the build-up of potentially dangerous electrostatic charges and/or be fitted with a discharging system	Adequate safety design for this requirement has been taken.	Pass
1.5.3	Energy supply other than electricity	-	-
	Where machinery is powered by an energy other than electricity, it must be so designed, constructed and equipped as to avoid all potential hazards associated with these types of energy	This situation doesn't exist.	N/A
1.5.4	Errors of fitting	-	-
	Errors likely to be made when fitting or refitting certain parts which could be a source of risk must be made impossible by the design of such parts or, failing this, by information on moving parts and/or their housings where the direction of movement must be known to avoid a risk	Appropriate design has been taken during design and attention has been paid during fitting.	Pass
	Where necessary, the instructions must give further information on these risks.	Adequate instructions are given in the instruction manual.	Pass
	Where a faulty connection can be the source of risk, incorrect connections must be made impossible by design or, failing this, by	The relative safety technologies have been taken and sufficient information has been given.	Pass

Clause	Requirement – test	Result	Verdict
	information given on the elements to be connected and, where appropriate, on the means of connection.		
1.5.5	Extreme temperatures	-	-
	Step must be taken to eliminate any risk of injury caused by contact with or proximity to machinery parts or materials at high or very low temperatures	This kind of situation doesn't exist.	N/A
	The necessary steps must also be taken to avoid or protect against the risk of hot or very cold material being ejected.	This kind of situation doesn't exist.	N/A
1.5.6	Fire	-	-
	Machinery must be designed and constructed to avoid all risk of fire or overheating posed by the machinery itself or by gases, liquids, dusts, vapors or the other substances produced or used by the machinery	This kind of situation doesn't exist.	N/A
1.5.7	Explosion	-	-
	Machinery must be designed and constructed to avoid any risk of explosion posed by the machinery itself or by gases, liquids, dusts, vapors or other substances produced or used by the machinery	No explosion risk is generated.	N/A
	Machinery must comply, as far as the risk of explosion due to its use in a potentially explosive atmosphere is concerned, with the provisions of the specific Community Directives.	No explosion risk is generated.	N/A
1.5.8	Noise	-	-
	Machinery must be so designed and constructed that risks resulting from the emission of airborne noise are reduced to the lowest level taking accounting of technical progress and the availability of means of reducing noise, in particular at source	Appropriate measure has been taken.	Pass
	The level of noise emission may be assessed with reference to comparative emission data for similar machinery.	No this necessary.	N/A
1.5.9	Vibration	-	-
	Machinery must be so designed and constructed that risks resulting from vibrations produced by the machinery are reduced to the lowest level, taking account of technical progress and the	Not applicable.	N/A

Clause	Requirement – test	Result	Verdict
	availability of means of reducing vibration, in particular at source		
	The level of vibration emission may be assessed with reference to comparative emission data for similar machinery.	No this necessary.	N/A
1.5.10	Radiation	-	-
	Undesirable radiation emissions from the machinery must be eliminated or be reduced to levels that do not have adverse effects on persons.	No harmful emission of radiation has been found.	N/A
	Any functional ionising radiation emissions must be limited to the lowest level which is sufficient for the proper functioning of the machinery during setting, operation and cleaning. Where a risk exists, the necessary protective measures must be taken.	No harmful emission of radiation has been found.	N/A
	Any functional non-ionising radiation emissions during setting, operation and cleaning must be limited to levels that do not have adverse effects on persons.	No harmful emission of radiation has been found.	N/A
1.5.11	External radiation	-	-
	Machinery must be so designed and constructed that external radiation doesn't interfere with its operation	Appropriate EMC protection measure has been taken.	Pass
1.5.12	Laser equipment	-	-
	Where laser equipment is used, the following provisions should be taken into account;	No laser equipment is used.	N/A
	- Laser equipment on machinery must be designed and constructed so as to prevent any accidental radiation	No laser equipment is used.	N/A
	- Laser equipment on machinery must be protected so that effective radiation, radiation produced by reflection or diffusion and secondary radiation don't damage health	No laser equipment is used.	N/A
	- Optical equipment for the observation or adjustment of laser equipment on machinery must be such that no health risk is created by the laser rays	No laser equipment is used.	N/A
1.5.13	Emissions of hazardous materials and substances	-	-
	Machinery must be so designed, constructed and/or equipped that risks due to gases, liquids, dust, vapors and other waste materials which it	It has been complied with.	Pass

Clause	Requirement – test	Result	Verdict
	produces can be avoided		
	Where a hazard cannot be eliminated, the machinery must be so equipped that hazardous materials and substances can be contained, evacuated, precipitated by water spraying, filtered or treated by another equally effective method.	No this kind of hazard exists.	N/A
	Where the process is not totally enclosed during normal operation of the machinery, the devices for containment and/or evacuation must be situated in such a way as to have the maximum effect.	Not applicable.	N/A
1.5.14	Risk of being trapped in a machine	-	-
	Machinery must be so designed, constructed or fitted with a means of preventing a exposed person from being enclosed within it or, if that is impossible, with a means of summoning help	It has been complied with the requirement.	Pass
1.5.15	Risk of slipping, tripping or falling	-	-
	Parts of the machinery where persons are liable to move about or stand must be designed and constructed to prevent persons slipping, tripping or falling on or off these parts	No slipping, tripping or falling risk has been found.	N/A
	Where appropriate, these parts must be fitted with handholds that are fixed relative to the user and that enable them to maintain their stability.	No this situation.	N/A
1.5.16	Lightning	-	-
	Machinery in need of protection against the effects of lightning while being used must be fitted with a system for conducting the resultant electrical charge to earth.	Not applicable.	N/A
1.6	Maintenance	-	-
1.6.1	Machinery maintenance	-	-
	Adjustment and maintenance points must be located outside danger zones.	They are located outside danger zones.	Pass
	It must be possible to carry out adjustment, maintenance, repair, cleaning and servicing operations while machinery is at a standstill	These jobs can be carried out while the machine is at a standstill.	Pass
	If one or more of the above conditions can't be satisfied for technical reasons, these operations must be possible without risk	Not applicable.	N/A
	In the case of automated machinery and, where necessary, other machinery, the manufacturer	The requirement has been complied with.	Pass

Clause	Requirement – test	Result	Verdict
	must take provision for a connecting device for mounting diagnostic fault-finding equipment		
	Automated machine components which have to be changed frequently, in particular for a change in manufacture or where they are liable to wear or likely to deteriorate following an accident, must be capable of being removed and replaced easily and in safety	The relative components can be removed and replaced easily and in safety.	<b>Pass</b>
	Access to the components must enable these tasks to be carried out with the necessary technical means in accordance with an operating method specified by the manufacturer	Appropriate means have been given in the instruction manual.	<b>Pass</b>
1.6.2	Access to operating position and servicing points	-	-
	Machinery must be designed and constructed in such a way as to allow access in safety to all areas where intervention is necessary during operation, adjustment and maintenance of the machinery.	Appropriate protection measures have been taken so that all areas can be accessed safely.	<b>Pass</b>
1.6.3	Isolation of energy sources	-	-
	All machinery must be fitted with means to isolate it from all energy sources	Circuit breaker has been taken into used.	<b>Pass</b>
	Such isolators must be clearly identified	They are identified clearly.	<b>Pass</b>
	They must be capable of being locked if reconnection could endanger exposed persons	Not applicable.	<b>N/A</b>
	The isolator must be capable of being locked also where an operator is unable, from any of the points to which he has access, to check that the energy is still cut off	The clause has been met.	<b>Pass</b>
	In the case of machinery supplied with electricity through a plug capable of being plugged into a circuit, separation of the plug is sufficient	Not applicable.	<b>N/A</b>
	After the energy is cut off, it must be possible to dissipate normally any energy remaining or stored in the circuits of the machinery without risk to exposed persons	This requirement has been complied with.	<b>Pass</b>
	As an exception to the above requirements, certain circuits may remain connected to their energy source in order, for example, to hold parts, protect information, light interiors, etc. In this case, special steps must be taken to ensure operator safety	This kind of situation doesn't exist.	<b>N/A</b>
1.6.4	Operator intervention	-	-

Clause	Requirement – test	Result	Verdict
	Machinery must be so designed, constructed and equipped that the need for operator intervention is limited	The operator intervention has been limited.	<b>Pass</b>
	If operator intervention can't be avoided, it must be possible to carry it out easily and in safety	No this kind of situation.	<b>N/A</b>
1.6.5	Cleaning of internal parts	-	-
	The machinery must be designed and constructed in such a way that it is possible to clean internal parts which have contained dangerous substances or preparations without entering them; any necessary unblocking must also be possible from the outside	The clause has been met.	<b>Pass</b>
	If it is absolutely impossible to avoid entering the machinery, the manufacturer must take steps during its construction to allow cleaning to take place safely.	It is not need to enter the machinery.	<b>N/A</b>
1.7	Information	-	-
1.7.1	Information and warnings on the machinery	-	-
	Information and warnings on the machinery should preferably be provided in the form of readily understandable symbols or pictograms.	Information and warnings are readily understandable pictograms.	<b>Pass</b>
	Any written or verbal information and warnings must be expressed in an official Community language or languages, which may be determined in accordance with the Treaty by the Member State in which the machinery is placed on the market and/or put into service and may be accompanied, on request, by versions in any other official Community language or languages understood by the operators.	It is in English.	<b>Pass</b>
1.7.1.1	Information and information devices	-	-
	The information needed to control machinery must be provided in a form that is unambiguous and easily understood.	Be unambiguous and easily understood.	<b>Pass</b>
	It must not be excessive to the extent of overloading the operator.	No this situation is found.	<b>Pass</b>
	Visual display units or any other interactive means of communication between the operator and the machine must be easily understood and easy to use.	It can be easily understood and easy to use.	<b>Pass</b>
1.7.1.2	Warning devices	-	-
	Where the health and safety of persons may be	It has been complied with.	<b>Pass</b>

Clause	Requirement – test	Result	Verdict
	endangered by a fault in the operation of unsupervised machinery, the machinery must be equipped in such a way as to give an appropriate acoustic or light signal as a warning.		
	Where machinery is equipped with warning devices these must be unambiguous and easily perceived. The operator must have facilities to check the operation of such warning devices at all times.	Be unambiguous and easily understood.	<b>Pass</b>
	The requirements of the specific Community Directives concerning colors and safety signals must be complied with	It has been complied with.	<b>Pass</b>
1.7.2	Warning of residual risks	-	-
	Where risks remain despite the inherent safe design measures, safeguarding and complementary protective measures adopted, the necessary warnings, including warning devices, must be provided.	Appropriate warning has been taken.	<b>Pass</b>
	Such warnings should preferably use readily understandable pictograms and/or be drawn up in one of the languages of the country in which the machinery is to be used, accompanied, on request, by the languages understood by the operators	They can be understood readily.	<b>Pass</b>
1.7.3	Marking	-	-
	All machinery must be marked legibly and indelibly with the following minimum particular:	-	-
	- the business name and full address of the manufacturer and, where applicable, his authorised representative,	It has been marked.	<b>Pass</b>
	- designation of the machinery,	It has been marked.	<b>Pass</b>
	- the CE Marking (see Annex III),	It has been marked.	<b>Pass</b>
	- designation of series or type,	It has been marked.	<b>Pass</b>
	- serial number, if any,	No this contained.	<b>N/A</b>
	- the year of construction, that is the year in which the manufacturing process is completed.	No this contained.	<b>N/A</b>
	It is prohibited to pre-date or post-date the machinery when affixing the CE marking.	The CE marking is affixed in a proper-date.	<b>Pass</b>
	Furthermore, machinery designed and constructed for use in a potentially explosive atmosphere must be marked accordingly.	No this situation.	<b>N/A</b>
	Machinery must also bear full information	This information has been provided.	<b>Pass</b>



Clause	Requirement – test	Result	Verdict
	relevant to its type and essential for safe use. Such information is subject to the requirements set out in section 1.7.1.		
	Where a machine part must be handled during use with lifting equipment, its mass must be indicated legibly, indelibly and unambiguously.	No this situation.	N/A
	The interchangeable equipment referred to in article 1 (2), third subparagraph, must bear the same information	No this situation.	N/A
	Machinery must also bear full information relevant to its type and essential for safe use. Such information is subject to the requirements set out in section 1.7.1.	This information has been provided.	Pass
1.7.4	Instructions	-	-
	All machinery must be accompanied by instructions in the official Community language or languages of the member State in which it is placed on the market and/or put into service.	In English.	Pass
	The instructions accompanying the machinery must be either 'Original instructions' or a 'Translation of the original instructions', in which case the translation must be accompanied by the original instructions.	'Original instructions' has been provided.	Pass
	By way of exception, the maintenance instructions intended for use by specialized personnel mandated by the manufacturer or his authorized representative may be supplied in only one Community language which the specialized personnel understand.	No this contained.	N/A
	The instructions must be drafted in accordance with the principles set out below.	It has been complied with.	Pass
1.7.4.1	General principles for the drafting of instructions	-	-
	a) The instructions must be drafted in one or more official Community languages. The words 'Original instructions' must appear on the language version(s) verified by the manufacturer or his authorized representative.	The 'Original instructions' has appeared on the language version.	Pass
	(b) Where no 'Original instructions' exist in the official language(s) of the country where the machinery is to be used, a translation into that/those language(s) must be provided by the manufacturer or his authorized representative or	The 'Original instructions' is in English.	Pass

Clause	Requirement – test	Result	Verdict
	by the person bringing the machinery into the language area in question. The translations must bear the words ‘Translation of the original instructions’.		
	(c) The contents of the instructions must cover not only the intended use of the machinery but also take into account any reasonably foreseeable misuse thereof.	It is included in the instructions.	<b>Pass</b>
	(d) In the case of machinery intended for use by non-professional operators, the wording and layout of the instructions for use must take into account the level of general education and acumen that can reasonably be expected from such operators.	The requirement has been complied with.	<b>Pass</b>
1.7.4.2	Contents of the instructions	-	-
	Each instruction manual must contain, where applicable, at least the following information:	-	-
	a) the business name and full address of the manufacturer and of his authorized representative;	This information has been provided.	<b>Pass</b>
	b) the designation of the machinery as marked on the machinery itself, except for the serial number (see section 1.7.3);	This information has been provided.	<b>Pass</b>
	(c) the EC declaration of conformity, or a document setting out the contents of the EC declaration of conformity, showing the particulars of the machinery, not necessarily including the serial number and the signature;	The EC declaration of conformity has been provided.	<b>Pass</b>
	(d) a general description of the machinery;	This information has been provided.	<b>Pass</b>
	(e) the drawings, diagrams, descriptions and explanations necessary for the use, maintenance and repair of the machinery and for checking its correct functioning;	This information has been provided.	<b>Pass</b>
	(f) a description of the workstation(s) likely to be occupied by operators;	No this contained.	<b>N/A</b>
	(g) a description of the intended use of the machinery;	This information has been provided.	<b>Pass</b>
	(h) warnings concerning ways in which the machinery must not be used that experience has shown might occur;	This information has been provided.	<b>Pass</b>
	(i) assembly, installation and connection instructions, including drawings, diagrams and	This information has been provided.	<b>Pass</b>

Clause	Requirement – test	Result	Verdict
	the means of attachment and the designation of the chassis or installation on which the machinery is to be mounted;		
	(j) instructions relating to installation and assembly for reducing noise or vibration;	No this contained.	N/A
	(k) instructions for the putting into service and use of the machinery and, if necessary, instructions for the training of operators;	No this contained.	N/A
	(l) information about the residual risks that remain despite the inherent safe design measures, safeguarding and complementary protective measures adopted;	No this contained.	N/A
	(m) instructions on the protective measures to be taken by the user, including, where appropriate, the personal protective equipment to be provided;	No this contained.	N/A
	(n) the essential characteristics of tools which may be fitted to the machinery;	No this contained.	N/A
	(o) the conditions in which the machinery meets the requirement of stability during use, transportation, assembly, dismantling when out of service, testing or foreseeable breakdowns;	No this contained.	N/A
	(p) instructions with a view to ensuring that transport, handling and storage operations can be made safely, giving the mass of the machinery and of its various parts where these are regularly to be transported separately;	No this contained.	N/A
	(q) the operating method to be followed in the event of accident or breakdown; if a blockage is likely to occur, the operating method to be followed so as to enable the equipment to be safely unblocked;	It has been included in the instructions.	Pass
	(r) the description of the adjustment and maintenance operations that should be carried out by the user and the preventive maintenance measures that should be observed;	It has been included in the instructions.	Pass
	(s) instructions designed to enable adjustment and maintenance to be carried out safely, including the protective measures that should be taken during these operations;	Use the language of the country in which the machinery is to be used	Pass
	(t) the specifications of the spare parts to be used, when these affect the health and safety of operators;	It has been included in the instructions.	Pass

Clause	Requirement – test	Result	Verdict
	(u) the following information on airborne noise emissions:	-	-
	- Equivalent continuous A-weighted pressure level at workstations, where this exceeds 70 dB (A); where this level doesn't exceed 70 dB (A), this fact must be indicated	A noise test report has been taken in the TCF.	<b>Pass</b>
	- Peak C-weighted instantaneous sound pressure value at workstations, where this exceeds 63 Pa (130 dB in relation to 20 uPa)	Not applicable.	<b>N/A</b>
	- Sound power level emitted by the machinery where the equivalent continuous A-weight sound pressure level at workstations exceeds 80 dB (A)	It has met the requirement.	<b>Pass</b>
	These values must be either those actually measured for the machinery in question or those established on the basis of measurements taken for technically comparable machinery which is representative of the machinery to be produced.	It has met the requirement.	<b>Pass</b>
	In the case of very large machinery, instead of the A-weighted sound power level, the A-weighted emission sound pressure levels at specified positions around the machinery may be indicated.	Not applicable.	<b>N/A</b>
	Where the harmonized standards are not applied, sound levels must be measured using the most appropriate method for the machinery	The harmonized standards are applied.	<b>Pass</b>
	Whenever sound emission values are indicated the uncertainties surrounding these values must be specified. The operating conditions of the machinery during measurement and the measuring methods used must be described.	See the instruction manual in detail.	<b>Pass</b>
	Where the workstation(s) are undefined or cannot be defined, A-weighted sound pressure levels must be measured at a distance of 1 metre from the surface of the machinery and at a height of 1,6 metres from the floor or access platform.	The workstation(s) are defined.	<b>Pass</b>
	The position and value of the maximum sound pressure must be indicated	No this contained.	<b>N/A</b>
	Where specific Community Directives lay down other requirements for the measurement of sound pressure levels or sound power levels, those Directives must be applied and the corresponding provisions of this section shall not apply;	Not applicable.	<b>N/A</b>

Essential health and safety requirements

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Clause	Requirement – test	Result	Verdict
	(v) where machinery is likely to emit non-ionising radiation which may cause harm to persons, in particular persons with active or non-active implantable medical devices, information concerning the radiation emitted for the operator and exposed persons.	The machine will not be used in a potentially explosive atmosphere.	N/A
1.7.4.3	Sales literature	-	-
	Sales literature describing the machinery must not contradict the instructions as regards health and safety aspects. Sales literature describing the performance characteristics of machinery must contain the same information on emissions as is contained in the instructions.	The requirement has been complied with.	Pass
2	Essential health and safety requirements for certain categories of machinery	-	-
3	Essential health and safety requirements to offset the particular hazards due to the mobility machinery	-	-
4	Essential health and safety requirements to offset the particular hazards due to a lifting operation	-	-
5	Essential health and safety requirements for machinery intended for underground work	-	-
6	Supplementary essential health and safety requirements for machinery presenting particular hazards due to the lifting of persons	-	-

## 2.2 ISO 12100 test report

## 1. Introduction.

In general this risk assessment report for the **Vacuum Packing Machine**, model **DZ-400/2SB** and its variants made by **Wenzhou Huaqiao Packing Machine Factory** was carried out in accordance with the requirements of Machinery Directive and the standards of EN ISO 12100-2010.

After the first assessment, some measures to eliminate the risks are given for the modification of machine or of relative documents with taking into account the explicit C-type EN standard or related B-type standard.

While taking appropriate provisions for the existing risks, the procedures and principles to eliminate the risk according to the most general B-type standard for any kind of machine, EN ISO 12100-2010, are followed, i.e.:

- First step: consider the possibility of eliminating risk at design stage.
- Second step: if impossible, protect the dangerous zone with appropriate design of safety guard or safety device.
- Third step: If above impossible, give warning signs to draw attention of operators about the residual risks.

In addition, some check list drawn from the explicit C-type EN standards, which are found suitable for or near the characteristic of this machine, are used to help developing the provisions for the elimination of the risks.

Finally the risk assessment was carried out again to ensure this machine and its relative documents are totally compliance with the Machinery Directive.

**2. Risk assessment and risk reduction**

<b>Risk assessment and risk reduction</b>				
<b>Machine</b>	Vacuum Packing Machine		<b>Analyst</b>	Elis
<b>Sources</b>	Specifications, preliminary design		<b>Extent</b>	Use phase: setting and operation
<b>Method</b>	Checklists: EN ISO 12100: 2010 Annex B		<b>Date</b>	Jan. -2021
<b>No.</b>	<b>Type of group</b>	<b>Hazards</b>		<b>Risk reduction Protective measures</b>
		<b>origin</b>	<b>Potential consequences</b>	
<b>1</b>	Mechanical hazards	Crushing of fingers or hands		Use warning sign
<b>2</b>	Thermal hazards	Scalding of fingers or hands		Use fixed guards and warning sign
<b>3</b>	Electrical hazards	Burns do to contact electrical Parts which have become live under fault		Electrical equipment in accordance with IEC 60204-1



## **Part III: Test report**

3.1 GP "637/5" vgu'tgr qtv

50"EN 60204-1 test report

3.5 Airborne noise test report

3.1 GP "637/5"gv"tgr qt v"

Test Report Content

This test report consists of:

Main report

General information:

The test results presented in this report relate only to the object tested and information given from applicant or manufacturer.

Test case verdicts:

Pass = Pass, Fail = Fail, N.A. = Not applicable. Placed in the column marked “Verdict”.

This is a Computer generated Test Report.

× Information written in “Italic” or “Italic and bold” font style is written by project Engineer during testing.

All other information in “Regular” or “Regular and bold” font style is a part of this “Test Report Form”.

CONTENT FOR ADDITIONAL INFORMATION

Clause	Requirement - test	Result	Verdict
0	Introduction	-	-
1	Scope	-	-
2	Normative references	-	-
3	Terms and definitions	-	-
4	Hazards on wrapping machines	-	-
4.1	General	-	-
	This clause lists all the significant hazards, hazardous situations and events that can be found on typical wrapping machines.	The possible risks in this machine have been safeguarded by appropriate measures.	<b>Pass</b>
	Before using this standard, the manufacturer shall establish that the hazards on his machine correspond to the hazards described in this standard using the principles detailed in EN ISO 14121-1.	A EN 14121-1 test report has been taken.	<b>Pass</b>
	If the manufacturer identifies hazards which are not listed in this clause, he shall assess these hazards by using the principles detailed in EN ISO 14121-1.	A EN 14121-1 risk assessment report has been taken.	<b>Pass</b>
	The hazards on a specific machine can vary depending on its working principle; the type, size and mass of the product; the packaging material; auxiliary equipment attached to the machine and the environment in which the machine is used.	The possible risks in this machine have been safeguarded by appropriate measures.	<b>Pass</b>
	The hazards which occur on most wrapping machines are listed in 4.2 and the hazards which are specific to particular types of wrapping machine are listed in 4.3 to 4.15.	Suitable protection measure has been taken.	<b>Pass</b>
4.2	General wrapping machine hazards	-	-
	The following hazards occur on most wrapping machines.	Suitable protection measure has been taken.	<b>Pass</b>
4.2.1	Mechanical hazards	-	-
4.2.1.1	Moving parts	-	-
	Wrapping machines may incorporate moving parts which present a variety of mechanical hazards including crushing, shearing, cutting, entanglement, friction, drawing-in. Some of these hazards may persist after the power supply has been cut off due to stored energy.	Suitable protection measure has been taken.	<b>Pass</b>
4.2.1.2	Pneumatic and hydraulic equipment	-	-
	Pneumatic and hydraulic equipment presents crushing, shearing, ejection of parts, explosion	Not applicable.	<b>N/A</b>

Clause	Requirement - test	Result	Verdict
	and injection of fluids hazards. Stored energy in pneumatic or hydraulic systems may cause mechanisms to move unexpectedly even when power supplies are disconnected. In addition hydraulic oil and pneumatic lubricating oil present a potential fire hazard and can contaminate agri-foodstuffs.		
4.2.1.3	Slip, trip and fall hazards	-	-
	Slip accidents can occur if liquids or solids from the machine e.g. lubricants, packaging materials or the product, spill onto traffic routes, work stations or means of access around the machine.	It has been considered during design.	<b>Pass</b>
	Trip accidents may occur if parts of the machine protrude beyond the machine frame at low level, or if cables and pipes associated with the machine are installed without proper consideration of tripping hazards.	It has been considered during design.	<b>Pass</b>
	Falls may occur if people climb or stand on parts of the machine above floor level, e.g. for magazine loading, size changing, maintenance or cleaning.	No this situation.	<b>N/A</b>
4.2.1.4	Loss of stability	-	-
	If wrapping machines become unstable and move unexpectedly or fall over they can cause crushing and impact injuries. Loss of stability can occur in the following circumstances:	No this situation.	<b>N/A</b>
	1) While the machine is in operation for example:	-	-
	a. If components are unbalanced;	No this situation.	<b>N/A</b>
	b. If the centre of gravity of the machine is high relative to its base area;	No this situation.	<b>N/A</b>
	c. If someone stands on the machine.	No this situation.	<b>N/A</b>
	2) While the machine is being moved, for example:	-	-
	a) If the manufacturer's lifting instructions are not followed;	No this situation.	<b>N/A</b>
	b) On machines fitted with wheels if the machine is moved on a slope or uneven surface.	No this situation.	<b>N/A</b>
4.2.1.5	Hazards from moveable guards	-	-
	Movable guards may present crushing, shearing and impact hazards when they open or close if	No this situation.	<b>N/A</b>

Clause	Requirement - test	Result	Verdict
	they have a high mass or move under gravity. If excessive effort is necessary to operate the guard and/or it is positioned in an unfavourable position, the operator may sustain strain injuries or damage to health. Powered guards may present crushing, shearing and impact hazards.		
4.2.2	Electrical hazards	-	-
4.2.2.1	Electrical equipment	-	-
	Electrical equipment on the machine generates a potential electric shock and burn hazard.	Suitable protection measure has been taken.	<b>Pass</b>
	In the presence of combustible materials there is a potential fire hazard. Electrical systems may act as an ignition source. In the presence of flammable substances or products which may create explosive atmospheres, this could give rise to an explosion hazard.	Suitable protection measure has been taken.	<b>Pass</b>
	If liquids, e.g. product spillage or cleaning substances like water, come into contact with the electrical conductors, there is a risk of electric shock.	Suitable protection measure has been taken.	<b>Pass</b>
4.2.2.2	Electrostatic phenomena	-	-
	Electric shock hazards can arise if parts of the machine or materials are electro-statically charged. Electrostatic discharge can be a source of ignition in the presence of flammable substances or explosive atmospheres.	No this situation.	<b>N/A</b>
4.2.3	Thermal hazards	-	-
	Parts of the machine e.g. sealing mechanisms and drive motors which have high surface temperatures may cause burning hazards. See EN ISO 13732-1 for details of the burn thresholds for different materials and contact times. The burning hazard will usually continue to exist for a period of time after power has been disconnected.	Suitable protection measure has been taken.	<b>Pass</b>
4.2.4	Noise	-	-
	Noise generated by wrapping machines can result in:	-	-
	- permanent hearing loss;	The noise can not cause such hazards.	<b>Pass</b>
	- tinnitus;	The noise can not cause such hazards.	<b>Pass</b>
	- tiredness, stress etc.;	The noise can not cause such hazards.	<b>Pass</b>
	- other effects such as loss of balance, loss of	Suitable protection measure has been taken.	<b>Pass</b>

Clause	Requirement - test	Result	Verdict
	awareness;		
	- interference with speech communication;	The noise can not cause such hazards.	<b>Pass</b>
	- inability to hear acoustic warning signals.	The noise can not cause such hazards.	<b>Pass</b>
4.2.5	Hazards from products and materials	-	-
4.2.5.1	Hazards generated by products	-	-
	Wrapping machines are used to pack a wide range of products, some of which may be potentially hazardous to persons operating or in the vicinity of the packaging machine during normal operation or if a package containing a hazardous substance is damaged in the packaging machine.	No this situation.	<b>N/A</b>
	Hazards generated by the product can include:	-	-
	1. Ingestion of harmful substances e.g. insecticides, aggressive or harmful chemicals, pharmaceuticals;	No this situation.	<b>N/A</b>
	2. Fire or explosion e.g. flammable liquids, explosives, dusty products;	No this situation.	<b>N/A</b>
	3. Biological hazards e.g. vaccines;	No this situation.	<b>N/A</b>
	4. Impact by ejected packaging materials or products e.g. broken glass.	No this situation.	<b>N/A</b>
4.2.5.2	Hazards generated by packaging materials	-	-
	Wrapping machines are intended to use a range of packaging materials, which can present the following hazards:	-	-
	1. Inhalation of harmful or unpleasant smoke or vapours from overheated or burning materials;	No this situation.	<b>N/A</b>
	2. Inhalation of harmful or unpleasant dusts, e.g. from paper;	No this situation.	<b>N/A</b>
	3. Cuts from handling packaging materials e.g. film, strap or paper edges;	Suitable protection measure has been taken.	<b>Pass</b>
	4. Fire due to overheating of combustible packaging materials, e.g. plastic films and paper;	No this situation.	<b>N/A</b>
	5. Electric shock from electrostatic discharges, e.g. at plastic film reel unwind mechanisms and plastic sheet feeding mechanisms.	Suitable protection measure has been taken.	<b>Pass</b>
4.2.6	Hazards due to neglecting ergonomic principles	-	-
	Hazards to safety and health can occur when people are carrying out the following activities on wrapping machines:	-	-
	1. Operation e.g. assuming a bad posture,	Ergonomic principles have been considered	<b>Pass</b>



Clause	Requirement - test	Result	Verdict
	mental overload including the use of manual controls that have inadequate design, location or identification;	during design.	
	2. Operation, cleaning and maintenance of machines under poor lighting conditions;	Ergonomic principles have been considered during design.	<b>Pass</b>
	3. Loading packaging materials e.g. assuming a bad posture, using excessive effort, fatigue;	Ergonomic principles have been considered during design.	<b>Pass</b>
	4. Loading products or unloading packages e.g. assuming a bad posture, performing unnatural hand or arm movements, using excessive effort, mental overload;	Ergonomic principles have been considered during design.	<b>Pass</b>
	5. Size and product changing, e.g. assuming a bad posture, using excessive effort;	Ergonomic principles have been considered during design.	<b>Pass</b>
	6. Cleaning the machine e.g. assuming a bad posture, using excessive effort;	Ergonomic principles have been considered during design.	<b>Pass</b>
	7. Maintenance e.g. assuming a bad posture, using excessive effort;	Ergonomic principles have been considered during design.	<b>Pass</b>
	8. Moving the machine e.g. using excessive effort.	Ergonomic principles have been considered during design.	<b>Pass</b>
4.2.7	Hazards caused by failures	-	-
4.2.7.1	Failure of power supplies	-	-
	The following hazards can occur on wrapping machines if their power supplies fail.	-	-
	1. Uncontrolled lowering or failing of machine assemblies or product;	It has been considered during design.	<b>Pass</b>
	2. Unexpected locking of brakes or other components;	It has been considered during design.	<b>Pass</b>
	3. Failure of a braking function;	It has been considered during design.	<b>Pass</b>
	4. Unexpected movement of assemblies when power is reconnected or due to stored energy.	It has been considered during design.	<b>Pass</b>
4.2.7.2	Failure of safety related parts of control systems	-	-
	Hazards can arise if components in safety related parts of control systems fail or if the system does not meet its safety requirement specifications. Failures may occur due to mechanical damage, contact failure, electronic component failure. Hazards may also arise if safety systems are deliberately defeated by operators.	It has been considered during design.	<b>Pass</b>
	Systematic faults may occur, especially in programmable systems as a result either of errors in the safety requirement specifications or	It has been considered during design.	<b>Pass</b>

Clause	Requirement - test	Result	Verdict
	of failure to meet the specifications. Failures can lead to loss of safety functions resulting in unexpected start-up of moving parts, incorrect sequencing of machine operations or prevent moving parts from stopping as expected.		
4.2.7.3	Failure of electronic drive systems	-	-
	On electronic drive systems where the power supply to a drive motor is not disconnected while the guards are open, there is a risk of unexpected start-up with consequential mechanical hazards if the control system malfunctions or responds to an external disturbance such as electromagnetic interference.	It has been considered during design.	<b>Pass</b>
4.2.8	Hazards due to neglecting hygienic design principles	-	-
	On machines that are intended to pack agri-foodstuffs, pharmaceuticals or other products where hygiene is a consideration, product contamination hazards can result if inappropriate contact materials or construction methods are used or if lubricants or other contaminating substances are allowed to come into contact with the product.	Not applicable.	<b>N/A</b>
4.2.9	Hazards from mechanism used on most wrapping machines	-	-
4.2.9.1	Drive systems	-	-
	Wrapping machines may incorporate mechanical, electrical, pneumatic or hydraulic drive mechanisms which present a variety of different hazards including crushing, shearing, cutting, entanglement, friction, drawing-in, electric shock and burning. Some of these hazards may persist after the power supply has been cut off due to stored energy.	Suitable protection measure has been taken.	<b>Pass</b>
4.2.9.2	Belt and slat-band conveyors	-	-
	Drawing-in or trapping hazards can be generated by in-running nips where belts pass over rollers or fixed parts of the conveyor frame. These hazards are increased if flights are attached to the belt or slat band.	It is exist in this machine, a warning mark has been taken.	<b>Pass</b>
4.2.9.3	Roller conveyors	-	-
	Drawing-in or trapping hazards can be	Not applicable.	<b>N/A</b>

Clause	Requirement - test	Result	Verdict
	generated by in-running nips between rotating roller of conveyors and their frame or machine parts.		
	On low-level conveyors, slip, trip or fall accidents may occur if people walk or stand on the conveyor e.g. for maintenance or cleaning. Trip accidents may occur if the conveyor starts while people are walking or standing on it.	Not applicable.	N/A
4.2.9.4	Size and product changing	-	-
	Typically, wrapping machines are constructed to handle a range of product and pack sizes. Changes of size or product can give rise to the following hazards:	-	-
	1. Danger zones on the machines may be exposed when components are moved;	Suitable protection measure has been taken.	Pass
	2. Handling change parts may give rise to ergonomic hazards;	Ergonomic principles have been considered during design.	Pass
	3. Where size or product changing is carried out under power, shearing and crushing hazards are likely to be present.	Size or product changing is carried out under power closed.	N/A
4.2.9.5	Modified atmosphere packaging	-	-
	Wrapping machines may use special atmosphere during the packing process to produce packages with enhanced shelf life. Gasses used are typically oxygen, nitrogen and carbon dioxide. These present the following hazards:	Not applicable.	N/A
	a) Oxygen: promotion of fire and explosion	Not applicable.	N/A
	b) Nitrogen: asphyxiation	Not applicable.	N/A
	c) Carbon dioxide: asphyxiation and intoxication	Not applicable.	N/A
	When an oil-lubricated rotary vane vacuum pump is in operation, aerosols are formed in the interior of the pump by the working fluid. An oxygen content in the surrounding gas over 21 % and the presence of combustible aerosols increase the risk of explosions. The necessary ignition energy can result from malfunction in the system, such as metal splinters in the vacuum pump.	Not applicable.	N/A
4.3	Hazards associated with a banding machine	Not applicable.	N/A
4.4	Hazards associated with a sleeve wrapping	Not applicable.	N/A

Clause	Requirement - test	Result	Verdict
	machine and a stretch banding machine		
4.5	Hazards associated with spiral wrapping machines	Not applicable.	N/A
4.6	Hazards associated with fold wrapping machines	Not applicable.	N/A
4.7	Hazards associated with extruded product wrapping machines	Not applicable.	N/A
4.8	Hazards associated with twist wrapping machine	Not applicable.	N/A
4.9	Hazards associated with over-wrapping machine	Not applicable.	N/A
4.10	Hazards associated with roll wrapping machines	Not applicable.	N/A
4.11	Hazards associated with foil and band wrapping machines and pleat wrapping machines	Not applicable.	N/A
4.12	Hazards associated with stretch film wrapping machines	Not applicable.	N/A
4.13	Hazards associated with L-sealing machine	Not applicable.	N/A
4.14	Hazards associated with skin packaging machines	Not applicable.	N/A
5	Safety requirements for wrapping machines	-	-
5.1	General	-	-
	The wrapping machine shall comply with the safety requirement and/or protective measures of this clause. In addition the machine shall be designed according to the principles of EN ISO 12100 for relevant but not significant hazards, which are not dealt with by this standard.	It has been complied with the requirement.	Pass
	Safety requirements which are appropriate for most wrapping machines are listed in 5.2 and safety requirements which are specific to particular types of wrapping machine are listed in 5.3 to 5.15.	It has been complied with the requirement.	Pass
5.2	General requirements for wrapping machines	-	-
	The following requirements apply to all wrapping machines where the equivalent hazard exists.	It has been complied with the requirement.	Pass
5.2.1	Requirement to eliminate mechanical hazards	-	-
5.2.1.1	Safeguarding of moving parts	Not applicable.	N/A
	When selecting the most appropriate safeguarding method for each part of a wrapping machine, preference shall be given to eliminating mechanical hazards by design e.g.	It has been considered during design.	Pass

Clause	Requirement - test	Result	Verdict
	by limiting the force, power or movement of moving parts. See 5.2.1.2 for details.		
	Where mechanical hazards cannot be eliminated by design, these hazards shall, wherever possible, be safeguarded using guards that comply with EN 953. The choice of guards shall be guided using Annex A of EN 953.	Suitable guards have been taken.	<b>Pass</b>
5.2.1.2	Safety by design	-	-
	Moving parts can be considered safe by design if the force exerted by the moving parts does not exceed 75 N, the pressure they exert against an object is less than 250.103 Pa (25 N/cm <sup>2</sup> ) and their energy is less than 4 J and the parts do not have sharp edges. If the hazardous movement is automatically reversed within 1 s when resistance is detected, the movement can be considered as safe if the force does not exceed 150 N, the pressure does not exceed 500.103 Pa (50 N/cm <sup>2</sup> ) and the energy is less than 10 J.	It has been complied with the requirement.	<b>Pass</b>
	Moving parts can also be made safe by design against injury from crushing hazards by ensuring sufficient distance between moving and fixed parts and between one moving part and another using the dimensions indicated in EN 349.	It has been complied with the requirement.	<b>Pass</b>
	Rotating parts, handles or hand wheels can be considered safe by design provided they are not spoked, have no projections and are smooth. Rotating shaft ends can be considered safe by design provided they are smooth, have no protruding parts and do not protrude from the machine more than ¼ of their diameter or 20 mm, whichever is the smaller.	It has been complied with the requirement.	<b>Pass</b>
5.2.1.3	Fixed and interlocked guards	-	-
	Moving parts which cannot be made safe by design shall be safeguarded by fixed or interlocked guards complying with EN 953 and dimensioned and positioned using Table 2 or 4 of EN ISO 13857.	Suitable fixed guards have been taken.	<b>Pass</b>
	Where open topped distance guards are used they shall be dimensioned and positioned in accordance with Table 2 of EN ISO 13857 and	Not applicable.	<b>N/A</b>

Clause	Requirement - test	Result	Verdict
	be at least 1600 mm from the floor level.		
	The gap for cleaning, under such distance guards shall be no greater than 240 mm, and the reach distance under the guards to the nearest danger zone shall be at least 850 mm.	It has been complied with the requirement.	<b>Pass</b>
	Where it is foreseeable that persons will try to put their lower limbs into a machine, guards shall be dimensioned and positioned in accordance with EN ISO 13857.	It has been complied with the requirement.	<b>Pass</b>
	The design of the guards and the number, size and position of access doors in guards shall ensure that the machine can be operated, cleaned, fitted with change parts and maintained easily and safely.	It has been complied with the requirement.	<b>Pass</b>
	The guards shall be sufficiently robust to retain products or packs that are ejected or fall down and be designed so that fallen or ejected products and packs can be retrieved safely.	It has been complied with the requirement.	<b>Pass</b>
	Guards and access doors to hazardous areas that are required to be opened or removed regularly for operation, maintenance, cleaning and setting purposes shall be interlocked with the machine's control system where the risk assessment indicates that it is necessary on the grounds of the frequency of access and the hazards arising. Where access is required to a hazardous area once per day or more frequently, interlocking systems shall be incorporated.	It has been complied with the requirement.	<b>Pass</b>
	However, where severe hazards exist, interlocking systems may be necessary where the frequency of access is lower than once per day, and this should be considered during the design risk assessment. The interlocking devices shall comply with 5.2.1.5.	No this situation.	<b>N/A</b>
5.2.1.4	Apertures in guards	-	-
5.2.1.4.1	General	-	-
	Apertures in guards shall be positioned and dimensioned to prevent access to danger zones within the machine when standing on the floor or access level and reaching into the aperture.	No this situation.	<b>N/A</b>
5.2.1.4.2	Small apertures	-	-
	For apertures where the width or height are less	No this situation.	<b>N/A</b>

Clause	Requirement - test	Result	Verdict
	than or equal to 120 mm, the minimum reach distance to the nearest danger zone through the aperture shall comply with Table 4 of EN ISO 13857.		
5.2.1.4.3	Medium sized apertures	-	-
	a) Where the width and height of the aperture are greater than 120 mm, but less than or equal to 400 mm and access is restricted by a conveyor, the minimum reach distance to the nearest danger zone shall be at least 850 mm and a prohibition symbol complying with Figure 19 – Prohibition sign “Do not reach in” shall be fitted to the guards near the aperture (see also Figure 20 – Tunnel guard on a machine),	No this situation.	N/A
	b) Where access to the aperture is not restricted by a conveyor the reach distance to the nearest danger zone shall comply with Table 2 of EN ISO 13857.	No this situation.	N/A
5.2.1.5	Interlocking devices associated with guards	-	-
	Moveable guards shall be interlocked with devices that comply with 4.2 of EN 1088 and shall be installed as indicated in Clauses 5 and 6 of that standard.	No this situation.	N/A
5.2.1.6	Stopping time	-	-
	Unless otherwise specified in this standard, the machine controls shall ensure that hazardous movements stop before any danger zones can be reached after opening an interlocked guard. Typically this will mean that movement must stop within 1 s of a guard being opened.	No this situation.	N/A
	If this requirement cannot be achieved, the guards shall be fitted with guard locking devices that prevent access to the danger zone until the hazardous movement has stopped. The guard locking device shall comply with 4.2.2 of EN 1088 and shall be installed according to 5.5 of that standard.	It has been complied with the requirement.	Pass
5.2.1.7	Operations with open guards	-	-
	The design objective shall be for all machine adjustments, maintenance, repair, cleaning and servicing to be carried out while the machine is	It has been complied with the requirement.	Pass

Clause	Requirement - test	Result	Verdict
	isolated from all power sources or from outside the danger zones. However if this objective cannot be achieved for technical reasons, operations with open guards are permissible where hazardous movements of moving parts may take place, when initiated by an operator using a hold to run control device, but only if all of the following requirements are fulfilled:		
	a) Design of the guards and control system shall minimise the risks of injury to the operator and other persons in the vicinity of the machine;	It has been complied with the requirement.	<b>Pass</b>
	b) Hold to run control device shall be positioned in such a way that the operator has a clear view of all the parts of the machine where movement is taking place;	No this situation.	<b>N/A</b>
	c) Hold to run function shall only be available after a lockable mode selection device, e.g. a key operated switch, is operated. Operation of this device shall prevent the machine from operating in automatic mode;	No this situation.	<b>N/A</b>
	d) If it is necessary to carry out powered movements with certain interlocked guards open, all other interlocked guards which would allow access to danger zones and are not within a clear view of the operator shall continue to operate interlocked as during normal operation;	No this situation.	<b>N/A</b>
	e) Wherever possible the control system shall ensure that movements initiated by the hold to run control are limited e.g. step by step, or at a reduced speed or with reduced power;	No this situation.	<b>N/A</b>
	f) Movement shall stop as quickly as possible, within a maximum time of 0,5 s after the hold to run control has been released;	No this situation.	<b>N/A</b>
	g) Release of the hold to run control button shall lead to a safe stop and prevent unexpected start up. See 5.2.2.4;	No this situation.	<b>N/A</b>
	h) An emergency stop actuator complying with 5.2.2.8 shall be mounted next to the hold to run controls.	No this situation.	<b>N/A</b>
5.2.1.8	Pneumatic and hydraulic equipment	-	-
	All pneumatic components and piping shall conform to the requirements of EN 983. All hydraulic components and piping shall conform	Not applicable.	<b>N/A</b>



Clause	Requirement - test	Result	Verdict
	to the requirements of EN 982.		
	Where safety functions are controlled through hydraulic or pneumatic systems, these circuits shall comply with the requirements of 5.2.2.4 and 5.2.2.8. Unexpected start-up shall be prevented using the measures described in EN 1037.	Not applicable.	N/A
	A separate means of isolation shall be provided for each type of energy, which is readily identifiable and accessible. Isolation valves shall be clearly labelled to indicate the method of operation of the valve and shall have the facility to be locked in the off position as described in 5.1.6 of EN 983 and 5.1.6 of EN 982.	Not applicable.	N/A
	Where the machine is designed to pack agri-foodstuffs, or other products where contamination is a significant risk, the design shall ensure that hydraulic oil or pneumatic lubricating oil cannot come into contact with the product.	Not applicable.	N/A
5.2.1.9	Measures to minimize slip hazards	-	-
	The design of the machine shall minimise the risk of liquids or solids spilling onto traffic routes, workstations or means of access around the machine. Where spills cannot be prevented the manufacturer shall supply a means of containment for the spill e.g. drip trays and describe the most appropriate method for removing the spillage in the instructions for use.	No any liquids or solids spilling.	Pass
5.2.1.10	Measures to minimize trip hazards	-	-
	The design of the machine should avoid assemblies at low level that are likely to pose a trip hazard. Where this is not possible, the manufacturer shall provide railings or some other form of barrier, which guides people away from the trip hazard.	It has been complied with the requirement.	Pass
	The manufacturer shall describe, in the instructions for use, how cables and pipes associated with the machine should be supported so they do not create a trip hazard.	No this contained.	N/A
5.2.1.11	Measures to minimize fall hazards	-	-

Clause	Requirement - test	Result	Verdict
	Where reasonably practicable the design of the machine shall allow it to be operated, cleaned and maintained from floor level. If this is not reasonably practicable the following requirements shall apply:	It has been complied with the requirement.	<b>Pass</b>
	1. Where a means of access is required for operation or cleaning or routine maintenance of the machine the manufacturer shall provide a means for safe access with the machine.	It has been complied with the requirement.	<b>Pass</b>
	2. Where access is required for any other purpose above floor level, the manufacturer shall specify the appropriate safe means of access and the related installation requirements in the instructions for use.	No this situation.	<b>N/A</b>
	Permanent means of access shall comply with 5.2 of EN ISO 14122-1: Stairs, ladders or platforms that form this permanent means of access shall conform to EN ISO 14122-2, EN ISO 14122-3 and EN ISO 14122-4.	No this situation.	<b>N/A</b>
5.2.1.12	Stability of machines	-	-
5.2.1.12.1	Stability during operation	-	-
	The machine shall be designed and constructed so that it is stable during normal use and foreseeable abnormal situations.	It has been complied with the requirement.	<b>Pass</b>
	The manufacturer shall state in the instruction handbook if the machine must be anchored to the floor or to another machine before use and give detailed information about the methods and means of anchorage.	No this situation.	<b>N/A</b>
	On machines fitted with wheels, at least two wheels shall be fitted with locking devices to ensure that the machine does not move unexpectedly when it is in use.	No this situation.	<b>N/A</b>
	If it is foreseeable that someone will stand on the machine, the manufacturer shall design the machine or its fixings to ensure stability in this situation.	No this situation.	<b>N/A</b>
5.2.1.12.2	Stability while being moved	-	-
	The manufacturer shall provide information in the instruction handbook on how to move the machine safely. Machines fitted with wheels shall be designed so that they are stable when	No this situation.	<b>N/A</b>

Clause	Requirement - test	Result	Verdict
	they are placed on a 10° slope in any orientation.		
5.2.1.13	Movable guards	-	-
	Moveable guards and guards that move under power, gravity or stored energy shall comply with EN 953 and shall not give rise to any additional risk.	No this situation.	N/A
5.2.2	Electrical requirements	-	-
5.2.2.1	Electrical equipment	-	-
	Electrical equipment shall comply with EN 60204-1. In the places where EN 60204-1 provides various options, the options stated below shall be used.	It has been complied with EN 60204-1.	Pass
5.2.2.2	Supply disconnecting device	-	-
	The machine shall be equipped with a readily identifiable and accessible supply disconnection device which complies with 5.3.2 of EN 60204-1.	A readily identifiable and accessible supply disconnection device has been taken.	Pass
5.2.2.3	Excepted circuits	-	-
	Some circuits, e.g. machine lighting circuits, do not need to be disconnected by the supply disconnection device. Circuits that do not have to be disconnected are listed in 5.3.5 of EN 60204-1. Those circuits that are not disconnected by the main supply disconnecting device shall each have their own supply disconnecting device, and be fitted with the labels and warning symbols described in 5.3.5 of EN 60204-1.	Not applicable.	N/A
5.2.2.4	Prevention of unexpected start up	-	-
	Devices to prevent unexpected start up shall be selected from 5.4 of EN 60204-1 and shall be designed so that they can be locked. The design of the controls shall comply with EN 1037.	It has been complied with the requirement.	Pass
	The control system shall be designed so that it does not start unexpectedly e.g. under the following conditions:	-	-
	a) As a result of a signal generated by a sensor (except when in automatic mode), and;	It has been complied with the requirement.	Pass
	b) By closing an interlocked guard (unless it is a control guard), and;	It has been complied with the requirement.	Pass
	c) By restoring the power supply after an	It has been complied with the requirement.	Pass

Clause	Requirement - test	Result	Verdict
	interruption.		
5.2.2.5	Protection against electric shock	-	-
	Electric shock by direct contact shall be prevented by choosing one of the methods described in 6.2 of EN 60204-1 and electric shock by indirect contact shall be prevented by choosing one of the methods described in 6.3 of that standard.	It has been complied with the requirement.	<b>Pass</b>
5.2.2.6	Degree of protection	-	-
	The protection level for electrical enclosures shall be selected on the basis of the environment in which the machine will be used and the anticipated cleaning method for the machine and its environment. See 12.3 of EN 60204-1, Examples of suitable protection levels as defined by EN 60529 are given in Tables 1 and 2 below.	It has been complied with the requirement.	<b>Pass</b>
5.2.2.7	Safety related stop function	-	-
	Safety related stops shall be stops of category 0 or 1 as defined in 9.2.2 of EN 60204-1.	It has been complied with the requirement.	<b>Pass</b>
5.2.2.8	Emergency stop	-	-
	Unless otherwise specified in the clauses for specific machines, machines shall be provided with an emergency stop button located on each control station. The emergency stop function shall comply with 9.2.5.4.2 of EN 60204-1. It shall function as a category 0 or category 1 stop according to 9.2.2 of EN 60204-1. The emergency stop device shall comply with EN 13850.	An emergency stop has been taken.	<b>Pass</b>
	On machines with electronic drives, the actuation of an emergency stop control device may, contrary to the requirements of 9.2.5.4 of EN 60204-1, initiate a category 2 stop as defined by 9.2.2 of EN 60204-1 provided that the requirements of 5.2.7.3 are satisfied.	It has been complied with the requirement.	<b>Pass</b>
	Sufficient emergency stop actuators shall be provided so that a person has to walk no further than 5,0 m to find an emergency stop actuator.	It has been complied with the requirement.	<b>Pass</b>
5.2.2.9	Electrostatic phenomena	-	-
	On wrapping machines where hazards may arise from the generation of static electricity, the	Not applicable.	<b>N/A</b>

Clause	Requirement - test	Result	Verdict
	manufacturer shall provide sufficient earth bonding or static elimination equipment to ensure that hazardous level of static electricity do not occur.		
5.2.3	Thermal hazards	-	-
	The external temperature of exposed parts of the machine, e.g. guards, control panels and electric motors, shall not exceed a temperature that will cause burning. For bare metal the temperature shall be no higher than 65 °C for contact times less than 1 s. See ISO 13732-1 for details of the burn thresholds for other materials or longer contact times.	It has been complied with the requirement.	<b>Pass</b>
	Where the machine includes parts with a temperature greater than the burn thresholds described in ISO 13732-1, the manufacturer shall minimise the risk of accidental contact e.g. by fitting insulation or safeguarding against unintentional contact and by fitting the warning sign No. 5041 "Caution, hot surface" of IEC 60417 on the outside of the machine or adjacent to the hot parts (see Figure 21 – Warning sign "Caution, hot surface"). The size, shape and colour of the warning sign shall comply with Tables 7, 4 and 2 of EN 61310-1.	It has been complied with the requirement.	<b>Pass</b>
	If having taken these measures, there is a residual risk of touching hot surfaces this shall be stated in the instruction handbook together with the measures which can be taken to avoid burn injuries, e.g. wearing gloves or other personal protection equipment.	It has been complied with the requirement.	<b>Pass</b>
5.2.4	Noise reduction	-	-
	The main sources of noise on wrapping machines are:	-	-
	a) Drive mechanisms; b) Vacuum pumps; c) Compressed air exhaust; d) Products (e.g. glass bottles and cans) hitting against each other; e) Packaging materials, e.g. by unreeling the strap or film; f) Mechanisms hitting against each other, e.g. during the welding process.	Suitable protection measure has been taken.	<b>Pass</b>

Clause	Requirement - test	Result	Verdict
	Wrapping machines shall as far as is reasonably practicable be designed to reduce noise at its source.	It has been complied with the requirement.	Pass
	Measures to reduce or eliminate noise at source include the following:	-	-
	i. Installing acoustic absorptive materials on the inside of machinery casings or enclosing power transmission components in acoustic absorptive material;	No this situation.	N/A
	ii. Designing mechanisms so that they do not hit against each other;	It has been complied with the requirement.	Pass
	iii. Use of damping materials on vibrating or impacted metal surfaces;	It has been complied with the requirement.	Pass
	iv. Fitting air exhausts with silencers;	No this situation.	N/A
	v. Using rubber rollers;	It has been complied with the requirement.	Pass
	vi. Use of vibration isolators;	It has been complied with the requirement.	Pass
	vii. Fitting partial or full acoustic enclosures;	It has been complied with the requirement.	Pass
	viii. Reducing the running speed of the machine or auxiliaries;	It has been complied with the requirement.	Pass
	ix. Use of helical instead of straight cut gears;	It has been complied with the requirement.	Pass
	x. Using timing belts instead of chains;	It has been complied with the requirement.	Pass
	xi. Additional design measures can be found in EN ISO 11688-1.	Not applicable.	N/A
	The criteria for assessing the efficiency of noise reduction measures are the actual noise emission values of the machine and not the nature of the reduction measure itself.	It has been complied with the requirement.	Pass
5.2.5	Measures to control hazards generated by products and materials	-	-
5.2.5.1	Measures to control hazards generated by products	-	-
	Where a machine is designed or specified to pack products that are hazardous to health or safety, the manufacturer shall:	Not applicable.	N/A
	1. Identify the nature of the hazard and methods for controlling the hazard. If the manufacturer is unable to obtain this information, the manufacturer shall state clearly in the instructions for use that the hazards that may be posed by the product have not been taken into account during the design of the machine. In this case requirements 2,3 and 4 do not apply.	Not applicable.	N/A

Clause	Requirement - test	Result	Verdict
	2. Design a safe system for handling the product and minimising the risk of damaging packages of hazardous products e.g. by limiting the force or torque, or by fitting shear pins or sensors.	Not applicable.	N/A
	a. If hazardous substances are likely to be discharged from the machine the manufacturer shall design the machine in accordance with EN 626-1 and EN 626-2;	Not applicable.	N/A
	b. If the machine is intended to handle a combustible product, the manufacturer shall design the machine following the principles of EN 13478;	Not applicable.	N/A
	c. If harmful biological substances are likely to be discharged from the machine the manufacturer shall design the machine in accordance with EN 626-1 and EN 626-2;	Not applicable.	N/A
	d. On machines where the hazard is from falling or ejected packs or products, the manufacturer shall provide guards that will contain these packs or products.	Not applicable.	N/A
	3. Supply any necessary ancillary equipment e.g., dust, aerosol or fume extraction or monitoring devices.	Not applicable.	N/A
	4. Provide information on how to install the ancillary equipment and operate, clean and maintain the machine without risks to health or safety.	Not applicable.	N/A
5.2.5.2	Measures to control hazards generated by packaging materials	-	-
	Where a machine is designed or specified to use packaging materials that are hazardous to health or safety, the manufacturer shall:	Not applicable.	N/A
	1. Identify the nature of the hazard and methods for controlling the hazard;	Not applicable.	N/A
	2. Design a safe system for handling the packaging material using relevant standards, for example	Not applicable.	N/A
	a. On machines using materials that can give off fumes hazardous to health, e.g. polyester (PET), limit the temperature of heating devices so that fumes are not generated, e.g. below 250 °C. If this cannot be done provide fume extraction equipment as	Not applicable.	N/A

Clause	Requirement - test	Result	Verdict
	described in 3;		
	b. On machines using packaging materials that produce excessive amounts of dust provide dust extraction equipment as described in 3;	Not applicable.	N/A
	c. On machines using materials with sharp edges, which can cause cut injuries guard exposed edges on the machine against accidental contact and recommend the use of gloves when handling the material in the instructions for use;	Not applicable.	N/A
	d. On machines using materials that can catch fire if overheated, the design of the control system shall minimise the risk of the packaging material catching fire. This may involve designing the control system so that the heated sealing devices do not remain in contact with the packaging material when the machine is stopped;	Not applicable.	N/A
	e. On machines handling glass containers the design shall ensure that people are protected from broken or flying glass;	Not applicable.	N/A
	f. On machines using packaging materials that can generate electrostatic charges provide suitable earth bonding and static elimination equipment.	Not applicable.	N/A
	3. Supply any necessary ancillary equipment e.g. dust or fume extraction equipment designed in accordance with EN 626-1 and EN 626-2.	Not applicable.	N/A
	4. Provide information on how to install the ancillary equipment and operate, clean and maintain the machine without risks to health or safety.	Not applicable.	N/A
5.2.6	Ergonomic design principles	-	-
5.2.6.1	Operating the machine	-	-
	Controls and control panels shall be positioned according to the requirements of EN 614-1. The indicators and actuators shall comply with EN 894-1, EN 894-2, EN 894-3, EN 61310-1 and EN 61310-3. Indication lights fitted to the machine shall comply with the requirements 10.3.2 and 10.3.3 of EN 60204-1.	It has been complied with the requirement.	Pass
5.2.6.2	Loading packaging materials	-	-



Clause	Requirement - test	Result	Verdict
	The position of mechanisms such as magazines for blanks and tape applicators shall be carefully designed to avoid bad posture or excessive effort that can cause injury. The design shall comply with EN 614 parts 1 and 2 and EN 1005-3 and further information is given in EN 1005-2 and EN 1005-4.	It has been complied with the requirement.	<b>Pass</b>
5.2.6.3	Loading products or unloading packages	-	-
	On machines that are fed or unloaded by hand, the design of the hand feeding area shall use the ergonomic design principles indicated in EN 1005-3 to minimise the risk of muscular skeletal injuries.	Ergonomic principles have been considered during design.	<b>Pass</b>
5.2.6.4	Size and product changes	-	-
	See 5.2.9.3.3 and 5.2.9.3.4.	See the follow describe.	<b>Pass</b>
5.2.6.5	Cleaning the machine	-	-
	The parts of the machine which must be reached for cleaning or retrieving fallen packs and products shall be easily accessible. This may involve designing the machine so it can be cycled to a position where cleaning can be carried out without the risk of injury.	It has been complied with the requirement.	<b>Pass</b>
5.2.6.6	Maintenance	-	-
	The design of the machine shall minimise the risk of physical strain when carrying out maintenance.	It has been complied with the requirement.	<b>Pass</b>
5.2.6.7	Moving the machine	-	-
	The manufacturer shall provide instructions on how to move the machine safely in the instruction handbook. Where machines are equipped with wheels the manufacturer shall ensure that the machine can be moved without the need for excessive effort.	No this contained in the instruction. This information has been provided to the user in another way.	<b>Pass</b>
5.2.7	Requirements to prevent hazards caused by failures	-	-
5.2.7.1	Power supplies	-	-
	The design of the machine shall ensure that the interruption and re-establishment after an interruption of the machine's power supplies does not lead to a dangerous situation.	It has been complied with the requirement.	<b>Pass</b>
	Where the failure of a power supply can lead to packs or products falling down e.g. from a	It has been complied with the requirement.	<b>Pass</b>

Clause	Requirement - test	Result	Verdict
	vacuum pick and place mechanism, the design of the machine shall ensure that the falling items do not cause injuries e.g. by guarding the area where the items might fall.		
	The uncontrolled lowering or falling of mechanisms can be prevented for example:	-	-
	a) self-locking construction,	No this situation.	N/A
	b) automatically acting fall restraint devices,	No this situation.	N/A
	c) back up power supplies or compressed air vessels.	No this situation.	N/A
5.2.7.2	Requirements for safety related parts of control systems	-	-
	Safety-related parts of control systems include, for example, emergency stop circuits, electric interlocking circuits and operating speed on hold-to-run controls. For safety aspects see EN 13849-1.	It has been complied with the requirement.	Pass
	Unless stated otherwise in this standard or indicated by the risk assessment which includes an assessment of the contribution of safety related parts of the control system to risk reduction, the following minimum requirements shall apply:	It has been complied with the requirement.	Pass
	a) On the hydraulic/pneumatic control system, the safety-related parts shall comply with at least category 1 of EN 13849-1.	No this situation.	N/A
	b) Non programmable electrical and electronic safety related part shall comply with at least category 1 of EN 13849-1.	It has been complied with the requirement.	Pass
	c) Electro sensitive protective equipment (ESPE) shall conform to EN 61496-1 type 2 or type 4. For positioning of ESPE systems the hand approach speed, response time of the ESPE, and the stopping performance of the machine shall be considered in accordance with EN 999, to ensure that any hazardous movement has been stopped before the operator reaches the danger zone.	It has been complied with the requirement.	Pass
	d) Computers and programmable electronic equipment used in safety related parts of control system shall comply with EN 62061.	No this situation.	N/A
	e) Hydraulic/pneumatic two-hand controls, shall	No this situation.	N/A

Clause	Requirement - test	Result	Verdict
	comply with type III A, and electric/electronic two-hand controls shall comply with type III B of EN 574 and type III of EN 60204-1. For positioning of two-hand-controls the hand approach speed shall be considered in accordance with EN 999, to ensure that any hazardous movement has been stopped before the operator reaches the danger zone.		
5.2.7.3	Motor drive system	-	-
	Where hazardous movement of machinery is controlled by servo, rectifier or inverter or similar electronic drive systems, the safety related parts of the control system shall prevent unexpected start up when the hazardous movement is not safeguarded e.g. when interlocked guards are opened to allow damaged packs to be removed during normal operation.	It has been complied with the requirement.	<b>Pass</b>
	The following design options are examples to prevent hazards from moving elements.	-	-
	a) Galvanic disconnection: The power supply to the actuators (electrical, pneumatic or hydraulic) that creates hazardous movement is removed by hardwired means that achieve galvanic disconnection when the interlocked guards are opened.	It has been complied with the requirement.	<b>Pass</b>
	The positioning of the contactor in the power circuit before or after the drive shall take full account of electromagnetic compatibility and dc switching constraints as well as the need to ensure any stored energy in the drive is discharged before the safe state is achieved.	It has been complied with the requirement.	<b>Pass</b>
	b) Safe pulse blocking: in safe pulse blocking the power supply remains connected to the motor, but the drive is prevented from moving by inhibiting the generation of pulses to the drive power semiconductors while the guards are open. Safe pulse blocking shall be achieved by galvanic disconnection of the power supply of either the pulse amplifier or the opto coupler of each power semiconductor once the drive has come to a standstill.	It has been complied with the requirement.	<b>Pass</b>
	c) Position monitoring: both the power supply	It has been complied with the requirement.	<b>Pass</b>

Clause	Requirement - test	Result	Verdict
	and the control signal remain connected to the motor, but the movement or position of the motor is monitored to ensure that it remains in a safe position. If aberrant movement is detected while the guards are open, the power supply to the motor is disconnected by galvanic disconnection. Where position monitoring is used the control system shall ensure that any aberrant movement is detected and halted before the movement can create a hazard and any stored energy in the drive controller is discharged.		
	d) Mechanical brake: the motor is fitted with a mechanical brake that is applied automatically when the interlocked guards are open and prevents the motor from moving even if the power is supplied to the motor. The braking torque of the mechanical brake shall be greater than the maximum torque that the drive can generate.	It has been complied with the requirement.	<b>Pass</b>
	e) Limitation of use: the method of preventing the unexpected start up of drives described above are only suitable for short duration machine intervention e.g. removal of damaged packs and packaging materials and are not a substitute for safe isolation procedures. The manufacturer shall ensure that the instruction handbook emphasises this point and indicates how the drive shall be isolated for other intervention, e.g. maintenance or cleaning.	It has been complied with the requirement.	<b>Pass</b>
5.2.8	Hygienic design requirements	-	-
	When a packaging machine is designed or specified to pack agri-foodstuffs or other products where hygiene is a requirement, the manufacturer shall:	Not applicable.	<b>N/A</b>
	1. Identify the level of hygienic design appropriate for the product. When the machine manufacturer is unable to find this information, he shall define the limitation of use for the machine and clearly state this in the instructions for use, e.g. “This machine has been designed to pack agri-foodstuffs with the following attributes: ...”	Not applicable.	<b>N/A</b>

Clause	Requirement - test	Result	Verdict
	2. Following the requirements of EN 1672-2 design a safe system for handling the product. Design features will include:	Not applicable.	N/A
	a. Use of appropriate contact materials;	Not applicable.	N/A
	b. Measures to prevent lubricating oils coming into contact with the product e.g. fitting filters to compressed air exhausts;	Not applicable.	N/A
	c. Food and splash areas (as defined in Clause 3 of EN 1672-2) which are free from crevices and ledges;	Not applicable.	N/A
	d. Food and splash areas that can be easily cleaned and inspected for cleanliness.	Not applicable.	N/A
	3. Describe appropriate cleaning and disinfecting procedures for the machine in the instructions for use.	Not applicable.	N/A
5.2.9	Requirements for mechanisms used on most wrapping machines	-	-
5.2.9.1	Drive systems	-	-
	Drive systems shall be safeguarded using the methods describe in 5.2.1.	It has been complied with the requirement.	Pass
5.2.9.2	Conveyors	-	-
5.2.9.2.1	Belt and slat-band conveyors	-	-
	Belt and slat-band conveyors shall comply with the relevant safety requirements of EN 619. Where fixed or interlocked guards are used to safeguard danger zones on conveyors they shall comply with 5.2.1.3.	It has been complied with the requirement.	Pass
5.2.9.2.2	Roller conveyors	-	-
	Roller conveyors shall comply with the relevant safety requirements of EN 619. Where fixed or interlocked guards are used to safeguard danger zones on conveyors they shall comply with 5.2.1.3.	Not applicable.	N/A
	Where low level conveyors are likely to be used as a means of access to the machine, e.g. for maintenance or cleaning of the machine, the design of the conveyor shall minimise the risk of slipping, tripping or falling e.g. by fitting non-slip plates between the rollers.	Not applicable.	N/A
5.2.9.3	Size and product changing	-	-
5.2.9.3.1	General	-	-
	The hazards presented by size or product	It has been complied with the requirement.	Pass

Clause	Requirement - test	Result	Verdict
	changing described in 4.2.9.4 shall be eliminated or minimized by complying with the following requirements.		
5.2.9.3.2	Design of guards	-	-
	The design of the machine and its guards shall ensure that danger zones on the machine are safeguarded for all the product and pack sizes for which the machine has been specified.	It has been complied with the requirement.	<b>Pass</b>
	Where reasonably practicable and on machines where product or size changing takes place once a week or more frequently, one of the following methods shall be used:	It is not need to change size once a week or more frequently.	<b>N/A</b>
	a) Guards designed to adjust automatically, either manually or under power e.g. by linking the fixed and adjustable guards together, or;	Not applicable.	<b>N/A</b>
	b) Guards connected to change parts so that the machine cannot function without the appropriate guarding being fitted, or;	Not applicable.	<b>N/A</b>
	c) Fitting interlocking devices to guards which are change parts so that the machine cannot operate without the guards in place.	Not applicable.	<b>N/A</b>
	Where the measures listed above are not reasonably practicable, e.g. if size or product changes are infrequent, it is acceptable to use guards that have to be manually adjusted and guards which are not interlocked but are change parts, provided a warning label or pictogram is fitted in a prominent position on the machine stating that the machine shall not be used until the guards have been correctly fitted or adjusted.	It has been complied with the requirement.	<b>Pass</b>
5.2.9.3.3	Change parts	-	-
	On machines where change parts are used hazards from excessive effort or strain shall be eliminated or reduced by the following measures:	It has been complied with the requirement.	<b>Pass</b>
	a) Change parts shall be designed so that they can be lifted, installed and removed easily, following the general requirements stated in 4.1 of EN 614-1, and;	It has been considered during design.	<b>Pass</b>
	b) Mass of change parts should not exceed 25 kg and the design of the machine and the	Not applicable.	<b>N/A</b>

Clause	Requirement - test	Result	Verdict
	change parts should ensure that people do not have to assume awkward postures while carrying, fitting or removing the parts, or;		
	c) Where the recommendations described in b) are not possible for technical reasons, the manufacturer shall either provide suitable mechanical lifting or handling equipment or the design of the machine and the change parts shall allow two people to lift the parts into place. If two persons are required to lift or fit change parts this shall be stated clearly in the instructions for use, or;	It has been considered during design.	<b>Pass</b>
	d) Where the mass of the change part is greater than 40 kg, the manufacturer shall provide suitable mechanical lifting or handling equipment to move the part.	Not applicable.	<b>N/A</b>
5.2.9.3.4	Size or product changing under power	-	-
	Where parts of the machine are adjusted under power the risks presented by these powered movements shall be eliminated using the following hierarchy of measures:	Not applicable.	<b>N/A</b>
	1) Ensuring that the movements are not hazardous by following the principles described in 5.2.1.2;	Not applicable.	<b>N/A</b>
	2) If 1) is not possible by ensuring that movements can only take place behind fixed or interlocked guards complying with 5.2.1.3;	Not applicable.	<b>N/A</b>
	3) Where it is not possible to fulfil the requirements of 1) or 2), hold-to-run controls may be used provided they comply with the requirements of 5.2.1.7.	-	-
5.2.9.4	Modified atmosphere packaging	-	-
	All vessels, pipes and fittings of controlled atmosphere installations shall be designed to safely contain the pressure. The gas supply shall be fitted with a lockable valve and means of safely venting the line downstream so that the cleaning and maintenance operation can be carried out safely. The design of the gas control system shall ensure that dangerous levels of gas do not build up around the machine, this may be achieved by:	It has been complied with the requirement.	<b>Pass</b>

Clause	Requirement - test	Result	Verdict
	a. Fitting a solenoid valve to shut off the supply of gas when the machine stops	It has been complied with the requirement.	Pass
	b. Providing exhausting equipment	No this situation.	N/A
	c. Fitting a solenoid valve upstream of flexible hoses. This valve shuts off the supply of gas when a hose ruptures and gas flow exceeds normal limits. The safety related control system shall comply with category 1 of EN 13849-1.	It has been complied with the requirement.	Pass
	For installation in machines using oxygen, fire resisting pipes shall be used and the materials used shall not catch fire in the presence of oxygen. The instruction handbook shall give clear information about these requirements.	No this situation.	N/A
	In machines where mixtures of gas can be selected a display will be installed showing the concentration of the components.	No this situation.	N/A
	The vacuum system of the machine shall be designed to prevent gas mixtures of oxygen concentration 21 % entering the vacuum pump. Additionally all machines shall be fitted with either:	Not applicable.	N/A
	a. Control system which ensures that the vacuum valve is closed before the gas mixture can enter the vacuum chamber and before the vacuum valve opens again no gas mixture remains in the chamber. The system shall be made in a way that complies with category 3 of EN 13849-1, or	Not applicable.	N/A
	b. Vacuum pump	Not applicable.	N/A
	If Solution a. is applied, the machine can be connected to a central vacuum system.	Not applicable.	N/A
5.3	Safety requirements for a banding machine	Not applicable.	N/A
5.4	Safety requirements for a sleeve wrapping machine and a stretch banding machine	Not applicable.	N/A
5.5	Safety requirements for a spiral wrapping machine	Not applicable.	N/A
5.6	Safety requirements for a fold wrapping machine	Not applicable.	N/A
5.7	Safety requirements for an extruded product wrapping machine	Not applicable.	N/A
5.8	Safety requirements for a twist wrapping machine	Not applicable.	N/A



Clause	Requirement - test	Result	Verdict
5.9	Safety requirements for an over-wrapping machine	Not applicable.	N/A
5.10	Safety requirements for a roll wrapping machine	Not applicable.	N/A
5.11	Safety requirements for a foil and band wrapping and a pleat wrapping machine	Not applicable.	N/A
5.12	Safety requirements for a stretch film wrapping machine	Not applicable.	N/A
5.13	Safety requirements for an L-sealing machine	Not applicable.	N/A
5.14	Safety requirements for a skin packaging machine	Not applicable.	N/A
5.15	Safety requirements for a shrink tunnel and hot water dip tank	Not applicable.	N/A
6	Verification of safety requirements and measures	-	-
6.1	General	-	-
	A manufacturer or supplier, who wishes to claim conformity to this standard, shall first verify that the machine fulfils the safety requirements and measures.	The manufacturer verify that the machine fulfils the safety requirements and measures firstly.	<b>Pass</b>
	The following verification procedures shall be adhered to for each machine unless stated otherwise hereafter.	It has been complied with the requirement.	<b>Pass</b>
6.2	Visual inspection with machine stopped	-	-
6.2.1	Mechanical parts	-	-
	Check that mechanical components are securely fixed and all unnecessary sharp edges have been removed.	The mechanical components are securely fixed and all unnecessary sharp edges have been removed.	<b>Pass</b>
6.2.2	Pneumatic systems	-	-
	Check that pneumatic components and piping conform to safety requirements of EN 983 and are correctly installed.	Not applicable.	N/A
6.2.3	Hydraulic systems	-	-
	Check that hydraulic components and piping conform to safety requirements of EN 982 and are correctly installed	Not applicable.	N/A
6.2.4	Electrical systems	-	-
	Check that electrical equipment and installation is in compliance with the technical documentation described in Clause 18 of EN 60204-1.	The electrical equipment and installation is in compliance with the technical documentation described in Clause 18 of EN 60204-1.	<b>Pass</b>
6.2.5	Guards	-	-

Clause	Requirement - test	Result	Verdict
	Check all guards are in place and securely fixed. Check that all interlocking devices are fitted and working correctly.	All guards are in place and securely fixed and all interlocking devices are fitted and working correctly.	<b>Pass</b>
6.2.6	Design requirements	-	-
	Check for each type of machine that the design features stipulated in Clause 5 have been incorporated.	It has been complied with the requirement.	<b>Pass</b>
	Check for each type of machine that the appropriate design requirements for the packaging materials being used and the product being packed have been followed.	It has been complied with the requirement.	<b>Pass</b>
6.3	Measurements with machine stopped	-	-
6.3.1	Guards	-	-
	For every type of machine, check that the relationship between the size of any apertures in the guards and their distance from the nearest danger zones conform to the requirements detailed in this standard in particular 5.2.1.4.2 and 5.2.1.4.3.	It has been complied with the requirement.	<b>Pass</b>
6.3.2	Electrical testing	-	-
	The tests as described in Clause 19 of EN 60204-1 shall be performed on every machine before it is despatched.	It has been complied with the requirement.	<b>Pass</b>
6.4	Visual inspections with machine running	-	-
6.4.1	Guard	-	-
	Check with machine running that the guards conform to the safety requirements.	It has been complied with the requirement.	<b>Pass</b>
6.4.2	Interlocking devices	-	-
	Check the operation of all emergency stop and interlocking devices. Check that following the operation of an emergency stop or interlocking device, that all hazardous movements cease and that the machine does not restart without resetting the emergency stop device or the interlocking devices and without an intentional start command.	Not applicable.	<b>N/A</b>
6.4.3	Dissipation of stored energy	-	-
	Check for each type of machine that stored energy e.g. from pneumatic systems or mechanisms that can move under gravity is either dissipated automatically before accessing danger zones or can be made safe by the use of	It has been complied with the requirement.	<b>Pass</b>

Clause	Requirement - test	Result	Verdict
	a means provided for this purpose.		
6.5	Measurements with machine running	-	-
6.5.1	Measurement and declaration of noise emission	-	-
	For every type of machine measure the noise emission values in the manner described in Annex A.	Suitable noise emission values have been taken to the machine	<b>Pass</b>
6.5.2	Temperature	-	-
	For every type of machine, with the machine fully warmed up, check that the external guard temperatures are not higher than the burn threshold limits for the foreseen contact times and materials shown in ISO 13732-1 (see 5.2.3). Identify all areas within the machine's guards with higher temperature than the burn thresholds so that they can be recorded in the instruction handbook and the warning sign shown in Figure 21 – Warning sign "Caution, hot surface", 5.2.3 can be fitted.	It has been complied with the requirement.	<b>Pass</b>
6.6	Verification procedures	-	-
	Verification procedures for each safety requirement detailed in Clause 5 are shown in Table 4.	It has been complied with the requirement.	<b>Pass</b>
7	Information for use	-	-
7.1	Marking	-	-
	Machines shall be marked with the following information:	-	-
	a) Name and address of the manufacturer or his authorised representative established in the European Economic Area;	It has been marked. .	<b>Pass</b>
	b) Mandatory marks, if appropriate e.g. CE mark, Ex symbol for equipment which can be used in a potentially explosive atmosphere;	CE mark has been marked.	<b>Pass</b>
	c) Year of construction of the machine;	It has been marked. .	<b>Pass</b>
	d) Designation of series or type, if any;	It has been marked. .	<b>Pass</b>
	e) Serial number, if any;	It has been marked. .	<b>Pass</b>
	f) Electrical markings as indicated in Clause 17 of EN 60204-1. Refer to that standard for full details;	It has been marked. .	<b>Pass</b>
	g) Rating information required for lifting equipment, if appropriate e.g. carrying capacity, safe working load, load limit, centre of gravity, gross weight;	No this situation.	<b>N/A</b>

Clause	Requirement - test	Result	Verdict
	h) the business name and full address of the authorised representative (where applicable);	Not applicable.	N/A
	i) the designation of the machinery.	It has been marked. .	Pass
7.2	Signals and warning signs	-	-
	The machine shall be equipped with the signs, signals and pictograms required in Clause 5. Signs, signals and pictograms shall be selected from those illustrated in Clause 5, EN 61310-1 and ISO 7000 wherever possible. Where other signs or pictograms are used, they shall be selected so they cannot be confused with the signs, signals or pictograms described in these standards.	Signals and warning signs have been taken to the machine.	Pass
7.3	Instruction handbook	-	-
7.3.1	General	-	-
	The instruction handbook shall contain all the information listed in 6.5 of EN ISO 12100-2 where the equivalent hazard exists. In addition and in particular the instruction handbook shall contain the following information that is specific to wrapping machines:	It has been complied with the requirement.	Pass
	1. A repetition of the markings on the machine as stipulated in 7.1;	It has been complied with the requirement.	Pass
	2. A description of the foreseen use for the machine e.g. the function of the machine, the product to be packed, packaging materials, pack sizes and speeds;	It has been complied with the requirement.	Pass
	3. A drawing indicating the work stations likely to be occupied by operators;	No this contained.	N/A
	4. Details of how high-level areas of the machine can be accessed in safety. The method of installing steps and platforms supplied with the machine and the specification of ladders or other temporary means of access that the user is to provide for other purposes than operation, cleaning or routine maintenance;	Not applicable.	N/A
	5. Tests that should be carried out before the machine is used for the first time;	No this contained.	N/A
	6. Explicit instructions on fitting of change parts, fitting of change part guards and adjustment of adjustable guards so that the machine is safe to use following a size or	No this contained.	N/A

Clause	Requirement - test	Result	Verdict
	product change;		
	7. A record of and explanation of the significance of all warning devices, signs or pictograms attached to the machine and the warning signals provided by the machine;	It has been complied with the requirement.	Pass
	8. Details of the control systems including circuit diagrams for the electrical, pneumatic and hydraulic systems. The diagrams shall show the interfaces between all permanently wired parts and programmable devices. Wiring diagrams and documentation of the electrical equipment shall comply with Clause 18 of EN 60204-1;	It has been complied with the requirement.	Pass
	9. Noise emission declaration according to Annex A;	No this contained.	N/A
	10. Where appropriate, instructions on how the machine shall be installed to minimise noise;	No this contained.	N/A
	11. Specifications of fluids to be used in the machine e.g. lubricating oil, hydraulic fluid;	No this contained.	N/A
	12. Details of drainage requirements and any residual spillage risks;	No this contained.	N/A
	13. A statement indicating whether the machine is or is not suitable for use in a potentially explosive atmosphere.	No this contained.	N/A
7.3.2	Agri-foodstuffs and pharmaceuticals	-	-
	On machines intended for use with agri-foodstuffs or pharmaceuticals or other products which can be contaminated if hygienic design principles are neglected, the instruction handbook shall contain instructions for cleaning and disinfecting of the machine, together with details of appropriate and inappropriate cleaning and disinfecting materials. The instruction handbook shall indicate the limitation for use of these products.	Not applicable.	N/A
7.3.3	Machines handling hazardous products	-	-
	Where the machine is intended for packing hazardous products, the instruction handbook shall indicate how these products can be handled safely and state any limitations for use of the machine with hazardous products e.g. "This machine is not suitable for use with	Not applicable.	N/A

Clause	Requirement - test	Result	Verdict
	products that can generate explosive atmosphere” or “This machine has been designed to pack products that are/are not ...”.		
	Where harmful dusts, smoke or fumes will be emitted by the machine, the manufacturer shall provide information on a suitable exhausting system for these substances, including the required air speed at the emission point.	Not applicable.	N/A
7.3.4	Hot melt adhesive systems	-	-
	The instruction handbook shall describe how the hot melt system can be filled, cleaned and maintained without the risk of injury or harm to health.	Not applicable.	N/A
	The instruction handbook shall advise the user of the importance of setting the temperature controls at an appropriate level for the adhesive being used and of the importance of effective ventilation in the room where the machine is located.	Not applicable.	N/A
	The instruction handbook shall advise operators of the need to wear gloves or eye protection when refilling the system.	Not applicable.	N/A
7.3.5	Moveable machines fitted with wheels	-	-
	For moveable machines fitted with wheels, the instructions shall state how the machine can be moved safely and how it can be stabilised before use.	Not applicable.	N/A
7.3.6	Machines incorporating lifting equipment	-	-
	For machines incorporating lifting equipment, the instruction handbook shall include a statement of the load for which the equipment has been designed, including the maximum working load and the maximum mass of lifting accessories.	Not applicable.	N/A

### 3.2 EN 60204-1 test report

Test Report Content

This test report consists of:

\*Main report

\*Annex A

- Continuity of the protective bonding circuit
- Insulation resistance test
- Withstanding voltage test

General information:

The test results presented in this report relate only to the object tested and information given from applicant or manufacturer.

Test case verdicts:

Pass=Pass, Fail=Fail, N/A=Not applicable. Placed in the column marked“Verdict”.

This is a Computer generated Test Report.

×Information written in “Italic” or “Regular and bold” font style is a part of this “Test Report Form”.



Clause	Requirement - test	Result	Verdict
1	Scope	-	-
2	Normative references	-	-
3	Terms, definitions and abbreviated terms	-	-
4	General requirements	-	-
4.1	General	-	-
4.1	General		
	This standard specifies requirements for the electrical equipment of machines.	electrical equipment used in machines	<b>Pass</b>
	The risks associated with the hazards relevant to the electrical equipment shall be assessed as part of the overall requirements for risk assessment of the machine. This will: – identify the need for risk reduction; and – determine adequate risk reductions; and – determine the necessary protective measures	See EN ISO 12100 test report	<b>Pass</b>
	for persons who can be exposed to those hazards, while still maintaining an appropriate performance of the machine and its equipment.	It is met the requirement.	<b>Pass</b>
	Hazardous situations can result from, but are not limited to, the following causes: – failures or faults in the electrical equipment resulting in the possibility of electric shock, arc, or fire; – failures or faults in control circuits (or components and devices associated with those circuits) resulting in the malfunctioning of the machine; – disturbances or disruptions in power sources as well as failures or faults in the power circuits resulting in the malfunctioning of the machine; – loss of continuity of circuits that can result in a failure of a safety function, for example those that depend on sliding or rolling contacts; – electrical disturbances for example, electromagnetic, electrostatic either from outside the electrical equipment or internally generated, resulting in the malfunctioning of the machine; – release of stored energy (either electrical or mechanical) resulting in, for example, electric	Suitable safety measures have been taken.	<b>Pass</b>

EN 60204-1: 2018 Safety of machinery-Electrical equipment of machines-  
Part 1: General requirements

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Clause	Requirement - test	Result	Verdict
	shock, unexpected movement that can cause injury; – acoustic noise and mechanical vibration at levels that cause health problems to persons; – surface temperatures that can cause injury.		
	Safety measures are a combination of the measures incorporated at the design stage and those measures required to be implemented by the user.	Safety measures has been considered during design.	<b>Pass</b>
	The design and development process shall identify hazards and the risks arising from them. Where the hazards cannot be removed and/or the risks cannot be sufficiently reduced by inherently safe design measures, protective measures (for example safeguarding) shall be provided to reduce the risk. Additional means (for example, awareness means) shall be provided where further risk reduction is necessary. In addition, working procedures that reduce risk can be necessary.	It is met the requirement.	<b>Pass</b>
	It is recommended that, where the user is known, Annex B be used to facilitate an exchange of information between the user and the supplier(s) on basic conditions and additional user specifications related to the electrical equipment.	It is met the requirement.	<b>Pass</b>
4.2	Selection of equipment	-	-
4.2.1	General	-	-
	Electrical components and devices shall:	-	-
	- be suitable for their intended use; and	-	-
	- conform to relevant IEC standards where such exist; and	conform to relevant IEC standards	<b>Pass</b>
	- be applied in accordance with the supplier's instructions.	It has been applied in accordance with the supplier's instructions.	<b>Pass</b>
4.2.2	Switchgear	-	-
	In addition to the requirements of IEC 60204-1, depending upon the machine, its intended use and its electrical equipment, the designer may select parts of the electrical equipment of the machine that are in compliance with relevant parts of the IEC 61439 series.	It is met the requirement.	<b>Pass</b>
4.3	Electrical supply	-	-

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Part 1: General requirements

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Clause	Requirement - test	Result	Verdict
4.3.1	General	-	-
	The electrical equipment shall be designed to operate correctly with the conditions of the supply:	-	-
	- as specified in 4.3.2 or 4.3.3, or	See 4.3.2 or 4.3.3 for details	<b>Pass</b>
	- as otherwise specified by the user, or	Not applicable.	<b>N/A</b>
	- as specified by the supplier of a special source of supply.	Not applicable.	<b>N/A</b>
4.3.2	AC supplies	-	-
	Steady state voltage: 0,9 to 1,1 of nominal voltage.	0,9 to 1,1 of nominal voltage.	<b>Pass</b>
	0,99 to 1,01 of nominal frequency continuously; 0,98 to 1,02 short time.	0,99 to 1,01 of nominal frequency continuously; 0,98 to 1,02 short time.	<b>Pass</b>
	Harmonic distortion not exceeding 10 % of the total r.m.s. voltage between live conductors for the sum of the 2nd through to the 5th harmonic. An additional 2 % of the total r.m.s. voltage between live conductors for the sum of the 6th through to the 30th harmonic is permissible.	It met the requirements	<b>Pass</b>
	Neither the voltage of the negative sequence component nor the voltage of the zero sequence component in three-phase supplies exceeding 2 % of the positive sequence component.	It met the requirements	<b>Pass</b>
	Supply interrupted or at zero voltage for not more than 3 ms at any random time in the supply cycle with more than 1 s between successive interruptions.	It met the requirements	<b>Pass</b>
	Voltage dips not exceeding 20 % of the peak voltage of the supply for more than one cycle with more than 1 s between successive dips.	It met the requirements	<b>Pass</b>
4.3.3	DC supplies	-	-
	From batteries	Not applicable.	<b>N/A</b>
	0.85 to 1.15 of nominal voltage; 0.7 to 1.2 of nominal voltage in the case of battery-operated vehicles.	Not applicable.	<b>N/A</b>
	Voltage interruption not exceeding 5 ms.	Not applicable.	<b>N/A</b>
	From converting equipment	Not applicable.	<b>N/A</b>
	0.9 to 1.1 of nominal voltage.	Not applicable.	<b>N/A</b>
	Voltage interruption not exceeding 20 ms with more than 1 s between successive interruptions.	Not applicable.	<b>N/A</b>
	Ripple (peak-to-peak) Not exceeding 0.15 of	Not applicable.	<b>N/A</b>

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Part 1: General requirements

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Clause	Requirement - test	Result	Verdict
	nominal voltage.		
4.3.4	Special supply systems	-	-
	For special supply systems such as on-board generators, the limits given in 4.3.2 and 4.3.3 may be exceeded provided that the equipment is designed to operate correctly with those conditions.	Not applicable	<b>N/A</b>
4.4	Physical environment and operating conditions	-	-
4.4.1	General	-	-
	The electrical equipment shall be suitable for the physical environment and operating conditions of its intended use.	It met the requirements	<b>Pass</b>
	The requirements of 4.4.2 to 4.4.8 cover the physical environment and operating conditions of the majority of machines covered by this part of IEC 60204. When special conditions apply or the limits specified are exceeded, an exchange of information between user and supplier (see 4.1) can be necessary.	See the follow clauch for details	<b>Pass</b>
4.4.2	Electromagnetic compatibility (EMC)	-	-
	The equipment shall not generate electromagnetic disturbances above levels that are appropriate for its intended operating environment. In addition, the equipment shall have a level of immunity to electromagnetic disturbances so that it can function in its intended environment.	It met the requirements	<b>Pass</b>
	Immunity and/or emission tests are required on the electrical equipment unless the following conditions are fulfilled:	It met the requirements	<b>Pass</b>
	- the incorporated devices and components comply with the EMC requirements for the intended EMC environment specified in the relevant product standard (or generic standard where no product standard exists), and;	No this situation.	<b>N/A</b>
	- the electrical installation and wiring are consistent with the instructions provided by the supplier of the devices and components with regard to mutual influences, (cabling, screening, earthing etc.) or with informative Annex H if such instructions are not available from the supplier.	It met the requirements	<b>Pass</b>

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Part 1: General requirements

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Clause	Requirement - test	Result	Verdict
4.4.3	Ambient air temperature	-	-
	Electrical equipment shall be capable of operating correctly in the intended ambient air temperature. The minimum requirement for all electrical equipment is correct operation in ambient air temperatures outside of enclosures (cabinet or box) between +5 °C and +40 °C.	It met the requirement	<b>Pass</b>
4.4.4	Humidity	-	-
	The electrical equipment shall be capable of operating correctly when the relative humidity does not exceed 50% at a maximum temperature of +40°C. Higher relative humidities are permitted at lower temperature (for example 90% at 20°C).	It has been complied with.	<b>Pass</b>
	Harmful effects of occasional condensation shall be avoided by design of the equipment or, where necessary, by additional measures (for example built-in heaters, air conditioners, drain holes).	It has been considered when designed.	<b>Pass</b>
4.4.5	altitude	-	-
	Electrical equipment shall be capable of operating correctly at altitudes up to 1000m above mean sea level.	It has been complied with.	<b>Pass</b>
	For equipment to be used at higher altitudes, it is necessary to take into account changes in parameters for example, the reduction of:	No this situation.	<b>N/A</b>
	– the dielectric strength, and; – the switching capability of the devices, and; – the cooling effect of the air.	No this situation.	<b>N/A</b>
	Other parameters of different components can also alter with altitude.	No this situation.	<b>N/A</b>
	It is recommended that the manufacturer is consulted regarding the correction factors to be used where the factors are not specified in product data.	No this situation.	<b>N/A</b>
4.4.6	Contaminants	-	-
	Electrical equipment shall be adequately protected against the ingress of solids and liquids.	It has been complied with.	<b>Pass</b>
	The electrical equipment shall be adequately protected against contaminants (for example dust, acids, corrosive gases, salts) that can be present in the physical environment in which the	It has been complied with.	<b>Pass</b>

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Clause	Requirement - test	Result	Verdict
	electrical equipment is to be installed.		
4.4.7	Ionizing and non-ionizing radiation	-	-
	When equipment is subject to radiation (for example microwave, ultraviolet, lasers, X-rays), additional measures shall be taken to avoid malfunctioning of the equipment and accelerated deterioration of the insulation.	Not applicable.	N/A
4.4.8	Vibration, shock, and bump	-	-
	Undesirable effects of vibration, shock and bump (including those generated by the machine and its associated equipment and those created by the physical environment) shall be avoided by the selection of suitable equipment, by mounting it away from the machine, or by provision of anti-vibration mountings.	No this situation.	N/A
4.5	Transportation and storage	-	-
	Electrical equipment shall be designed to withstand, or suitable precautions shall be taken to protect against, the effects of transportation and storage temperatures within a range of -25 °C to +55 °C and for short periods not exceeding 24 h at up to +70 °C. Suitable means shall be provided to prevent damage from humidity, vibration, and shock.	The relevant environment condition has been described in the instruction manual.	<b>Pass</b>
4.6	Provisions for handling	-	-
	Heavy and bulky electrical equipment that has to be removed from the machine for transport, or that is independent of the machine, shall be provided with suitable means for handling by cranes or similar equipment.	It is moved by forklift.	<b>Pass</b>
5	Incoming supply conductor terminations and devices for disconnecting and switching off	-	-
5.1	Incoming supply conductor terminations	-	-
	It is recommended that, where practicable, the electrical equipment of a machine is connected to a single incoming supply. Where another supply is necessary for certain parts of the equipment (for example, electronic equipment that operates at a different voltage), that supply should be derived, as far as is practicable, from devices (for example, transformers, converters) forming part	a single incoming supply	<b>Pass</b>

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Clause	Requirement - test	Result	Verdict
	of the electrical equipment of the machine. For large complex machinery comprising a number of widely-spaced machines working together in a co-ordinated manner, there can be a need for more than one incoming supply depending upon the site supply arrangements (see 5.3.1).		
	Unless a plug is provided with the machine for the connection to the supply (see 5.3.2 e), it is recommended that the supply conductors are terminated at the supply disconnecting device.	the supply conductors are terminated at the supply disconnecting device.	<b>Pass</b>
	Where a neutral conductor is used it shall be clearly indicated in the technical documentation of the machine, such as in the installation diagram and in the circuit diagram, and a separate insulated terminal, labelled N in accordance with 16.1, shall be provided for the neutral conductor. The neutral terminal may be provided as part of the supply disconnecting device.	a neutral conductor is clearly indicated in the technical documentation of the machine and a separate insulated terminal, labelled N in accordance.	<b>Pass</b>
	There shall be no connection between the neutral conductor and the protective bonding circuit inside the electrical equipment.	no connection between the neutral conductor and the protective bonding circuit inside the electrical equipment	<b>Pass</b>
	There shall be no connection between the neutral conductor and the protective bonding circuit inside the electrical equipment.	It is no connection between the neutral conductor and the protective bonding circuit inside the electrical equipment.	<b>Pass</b>
	Exception: a connection may be made between the neutral terminal and the PE terminal at the point of the connection of the power supply to the machine for TN-C systems.	Not applicable.	<b>N/A</b>
	For machines supplied from parallel sources, the requirements of IEC 60364-1 for multiple source systems apply.	Not applicable.	<b>N/A</b>
	Terminals for the incoming supply connection shall be clearly identified in accordance with IEC 60445. The terminal for the external protective conductor shall be identified in accordance with 5.2.	clearly identified	<b>Pass</b>
5.2	Terminal for connection of the external protective conductor	-	-
	For each incoming supply, a terminal shall be provided in the same compartment as the associated line conductor terminals for	It met the requirements	<b>Pass</b>

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Clause	Requirement - test	Result	Verdict
	connection of the machine to the external protective conductor.		
	The terminal shall be of such a size as to enable the connection of an external protective copper conductor with a cross-sectional area determined in relation to the size of the associated line conductors in accordance with Table 1.	It met the requirements	<b>Pass</b>
	Where an external protective conductor of a material other than copper is used, the terminal size shall be selected accordingly.	Copper is used.	<b>N/A</b>
	At each incoming supply point, the terminal for connection of the external protective earthing system or the external protective conductor shall be marked or labelled with the letters PE (see IEC 60445).	labelled with the letters PE.	<b>Pass</b>
5.3	Supply disconnecting (isolating) device	-	-
5.3.1	General	-	-
	A supply disconnecting device shall be provided:	-	-
	- for each incoming source of supply to a machine(s);	be provided:	<b>Pass</b>
	- for each on-board power supply.	Not applicable	<b>N/A</b>
	The supply disconnecting device shall disconnect (isolate) the electrical equipment of the machine from the supply when required (for example for work on the machine, including the electrical equipment).	It met the requirement	<b>Pass</b>
	When two or more supply disconnecting devices are provided, protective interlocks for their correct operation shall also be provided in order to prevent a hazardous situation, including damage to the machine or to the work in progress.	Not applicable	<b>N/A</b>
5.3.2	Type	-	-
	The supply disconnecting device shall be one of the following types:	-	-
	a) switch-disconnector, with or without fuses, in accordance with IEC 60947-3, utilization category AC-23B or DC-23B;	A switch-disconnector	<b>Pass</b>
	b) control and protective switching device suitable for isolation, in accordance with IEC 60947-6-2;	Not applicable	<b>N/A</b>



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Clause	Requirement - test	Result	Verdict
	c) a circuit-breaker suitable for isolation in accordance with IEC 60947-2;	Not applicable	N/A
	d) any other switching device in accordance with an IEC product standard for that device and which meets the isolation requirements and the appropriate utilization category and/or specified endurance requirements defined in the product standard;	Not applicable	N/A
	e) a plug/socket combination for a flexible cable supply.	Not applicable	N/A
5.3.3	Requirements	-	-
	When the supply disconnecting device is one of the types specified in 5.3.2 a) to d) it shall fulfil all of the following requirements:	-	-
	- isolate the electrical equipment from the supply and have one OFF (isolated) and one ON position marked with "O" and "I" (symbols IEC 60417-5008 (DB:2002-10) and IEC 60417-5007 (DB:2002-10), see 10.2.2);	Marked O.	Pass
	- have a visible contact gap or a position indicator which cannot indicate OFF (isolated) until all contacts are actually open and the requirements for the isolating function have been satisfied;	Not applicable	N/A
	- have an operating means (see 5.3.4);	have an external operating means	Pass
	- be provided with a means permitting it to be locked in the OFF (isolated) position (for example by padlocks). When so locked, remote as well as local closing shall be prevented;	It can be locked in the OFF.	Pass
	- disconnect all live conductors of its power supply circuit. However, for TN supply systems, the neutral conductor may or may not be disconnected except in countries where disconnection of the neutral conductor (when used) is compulsory;	No TN supply system.	Pass
	- have a breaking capacity sufficient to interrupt the current of the largest motor when stalled together with the sum of the normal running currents of all other motors and other loads. The calculated breaking capacity may be reduced by the use of a proven diversity factor. Where motor(s) are supplied by converter(s) or similar	A breaking capacity is supplied.	Pass

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Clause	Requirement - test	Result	Verdict
	devices, the calculation should take into account the possible effect on the required breaking capacity.		
	Where the supply disconnecting device is a plug/socket combination, it shall comply with the requirements of 13.4.5 and shall have the breaking capacity, or be interlocked with a switching device that has a breaking capacity, sufficient to interrupt the current of the largest motor when stalled together with the sum of the normal running currents of all other motors and other loads. The calculated breaking capacity may be reduced by the use of a proven diversity factor. Where the interlocked switching device is electrically operated (for example a contactor) it shall have an appropriate utilisation category. Where motor(s) are supplied by converter(s) or similar devices, the calculation should take into account the possible effect on the required breaking capacity.	A switching device with an appropriate utilisation category is provided for switching the machine on and off.	<b>Pass</b>
	Where the supply disconnecting device is a plug/socket combination, a switching device with an appropriate utilisation category shall be provided for switching the machine on and off. This can be achieved by the use of the interlocked switching device described above.	Not applicable.	<b>N/A</b>
5.3.4	Operating means of the supply disconnecting device	-	-
	The operating means (for example, a handle) of the supply disconnecting device shall be external to the enclosure of the electrical equipment.	It met the requirement	<b>Pass</b>
	Exception: power-operated switchgear need not be provided with a handle outside the enclosure where other means (e.g. pushbuttons) are provided to open the supply disconnecting device from outside the enclosure.	Not applicable.	<b>N/A</b>
	The operating means of the supply disconnecting device shall be easily accessible and located between 0,6 m and 1,9 m above the servicing level. An upper limit of 1,7 m is recommended.	It met the requirement	<b>Pass</b>
	Where the external operating means is intended	Not applicable.	<b>N/A</b>

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Clause	Requirement - test	Result	Verdict
	for emergency operation, see 10.7.3 or 10.8.3.		
	Where the external operating means is not intended for emergency operations: – it is recommended that it be coloured BLACK or GREY (see 10.2) – a supplementary cover or door that can be readily opened without the use of a key or tool may be provided, for example for protection against environmental conditions or mechanical damage. Such a cover/door shall clearly show that it provides access to the operating means. This can be achieved, for example, by use of the relevant symbol IEC 60417-6169-1 (2012-08) (Figure 2) or IEC 60417-6169-2.	Not applicable.	N/A
5.3.5	Excepted circuits	-	-
	The following circuits need not be disconnected by the supply disconnecting device:	-	-
	- lighting circuits for lighting needed during maintenance or repair;	No this situation.	N/A
	- socket outlets for the exclusive connection of repair or maintenance tools and equipment (for example hand drills, test equipment) (see 15.1);	No this situation.	N/A
	- undervoltage protection circuits that are only provided for automatic tripping in the event of supply failure;	It met the requirement	Pass
	- circuits supplying equipment that should normally remain energized for correct operation (for example temperature controlled measuring devices, product (work in progress) heaters, program storage devices);	It met the requirement	Pass
	It is recommended, however, that such circuits be provided with their own disconnecting device.	No this situation.	N/A
	Control circuits supplied via another supply disconnecting device, regardless of whether that disconnecting device is located in the electrical equipment or in another machine or other electrical equipment, need not be disconnected by the supply disconnecting device of the electrical equipment.	No this situation.	N/A
	Where such a circuit is not disconnected by the supply disconnecting device:	-	-

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Clause	Requirement - test	Result	Verdict
	- permanent warning label(s) in accordance with 16.1 shall be appropriately placed in proximity to the supply disconnecting device;	No this situation.	<b>N/A</b>
	- a corresponding statement shall be included in the maintenance manual, and one or more of the following shall apply;	No this situation.	<b>N/A</b>
	- the conductors are identified by colour taking into account the recommendation of 13.2.4;	No this situation.	<b>N/A</b>
	-excepted circuits are separated from other circuits;	No this situation.	<b>N/A</b>
	- excepted circuits are identified by permanent warning label(s).	No this situation.	<b>N/A</b>
5.4	Devices for removal of power for prevention of unexpected start-up	-	-
	Devices for removal of power for the prevention of unexpected start-up shall be provided where a start-up of the machine or part of the machine can create a hazard (for example during maintenance). Such devices shall be appropriate and convenient for the intended use, be suitably placed, and readily identifiable as to their function and purpose. Where their function and purpose is not otherwise obvious e.g. by their location) these devices shall be marked to indicate the extent of removal of power.	It met the requirement	<b>Pass</b>
	The supply disconnecting device or other devices in accordance with 5.3.2 may be used for prevention of unexpected start-up.	It met the requirement	<b>Pass</b>
	Disconnectors, withdrawable fuse links and withdrawable links may be used for protection of unexpected start-up only if they are located in an enclosed electrical operating area (see 3.1.23).	It met the requirement	<b>Pass</b>
	Devices that do not fulfil the isolation function (for example a contactor switched off by a control circuit, or Power Drive System (PDS) with a Safe Torque Off (STO) function in accordance with IEC 61800-5-2) may only be used for prevention of unexpected start-up during tasks such as: – inspections;	It met the requirement	<b>Pass</b>

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Clause	Requirement - test	Result	Verdict
	<ul style="list-style-type: none"> <li>- adjustments;</li> <li>- work on the electrical equipment where: <ul style="list-style-type: none"> <li>• there is no hazard arising from electric shock (see Clause 6) and burn;</li> <li>• the switching off means remains effective throughout the work;</li> <li>• the work is of a minor nature (for example, replacement of plug-in devices without disturbing existing wiring).</li> </ul> </li> </ul>		
	The selection of a device will be dependent on the risk assessment, taking into account the intended use of the device, and the persons who are intended to operate them.	It met the requirement	<b>Pass</b>
5.5	Devices for isolating electrical equipment	-	-
	Devices shall be provided for disconnecting (isolating) electrical equipment to enable work to be carried out when it is de-energised and isolated. Such devices shall be:	It met the requirement	<b>Pass</b>
	- appropriate and convenient for the intended use;	It met the requirement	<b>Pass</b>
	- suitably placed;	It met the requirement	<b>Pass</b>
	- readily identifiable as to which part(s) or circuit(s) of the equipment is served. Where their function and purpose is not otherwise obvious (e.g. by their location) these devices shall be marked to indicate the extent of the equipment that they isolate.	It met the requirement	<b>Pass</b>
	The supply disconnecting device (see 5.3) may, in some cases, fulfil that function. However, where it is necessary to work on individual parts of the electrical equipment of a machine, or on one of a number of machines fed by a common conductor bar, conductor wire or inductive power supply system, a disconnecting device shall be provided for each part, or for each machine, requiring separate isolation.	It met the requirement	<b>Pass</b>
	In addition to the supply disconnecting device, the following devices that fulfil the isolation function may be provided for this purpose:	-	-
	- devices described in 5.3.2;	It met the requirement	<b>Pass</b>
	- disconnectors, withdrawable fuse links and withdrawable links only if located in an enclosed	No this situation.	<b>N/A</b>

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Clause	Requirement - test	Result	Verdict
	electrical operating area (see 3.1.23) and relevant information is provided with the electrical equipment		
5.6	Protection against unauthorized, inadvertent and/or mistaken connection	-	-
	The devices described in 5.4 and 5.5 that are located outside an enclosed electrical operating area shall be equipped with means to secure them in the OFF position (disconnected state), (for example by provisions for padlocking, trapped key interlocking). When so secured, remote as well as local reconnection shall be prevented.	It met the requirement	<b>Pass</b>
	Where the devices described in 5.4 and 5.5 are located inside an enclosed electrical operating area other means of protection against reconnection (for example warning labels) can be sufficient.	No this situation.	<b>N/A</b>
	However, when a plug/socket combination according to 5.3.2 e) is so positioned that it can be kept under the immediate supervision of the person carrying out the work, means for securing in the disconnected state need not be provided.	No this situation.	<b>N/A</b>
6	Protection against electric shock	-	-
6.1	General	-	-
	The electrical equipment shall provide protection of persons against electric shock by:	-	-
	- direct contact (see 6.2 and 6.4), and;	Please see the following statements.	<b>Pass</b>
	- fault protection (see 6.3 and 6.4).	Please see the following statements.	<b>Pass</b>
	The measures for protection given in 6.2, 6.3, and, for PELV, in 6.4, are a selection from IEC 60364-4-41. Where those measures are not practicable, for example due to the physical or operational conditions, other measures from IEC 60364-4-41 may be used (e.g. SELV).	It met the requirement	<b>Pass</b>
6.2	Basic protection	-	-
6.2.1	General	-	-
	For each circuit or part of the electrical equipment, the measures of either 6.2.2 or 6.2.3 and, where applicable, 6.2.4 shall be applied.	Please see the following statements.	<b>Pass</b>
	Exception: where those measures are not appropriate, other measures for protection against	It met the requirement	<b>Pass</b>

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Clause	Requirement - test	Result	Verdict
	direct contact (for example by using barriers, by placing out of reach, using obstacles, using construction or installation techniques that prevent access) as defined in IEC 60364-4-41 may be applied (see 6.2.5 and 6.2.6).		
	Where the equipment is located in places open to all persons, which can include children, measures of either 6.2.2 with a minimum degree of protection against contact with live parts corresponding to IP4X or IPXXD (see IEC 60529), or 6.2.3 shall be applied.	It met the requirement	<b>Pass</b>
6.2.2	Protection by enclosures	-	-
	Live parts shall be located inside enclosures that conform to the relevant requirements of Clauses 4, 11, and 14 and that provide protection against direct contact of at least IP2X or IPXXB (see IEC 60529).	Minimum protection degree for live part while cover of control cabinet is IP2X	<b>Pass</b>
	Where the top surfaces of the enclosure are readily accessible, the minimum degree of protection against direct contact provided by the top surfaces shall be IP4X or IPXXD.	IP54 for the top surface.	<b>Pass</b>
	Opening an enclosure (i.e. opening doors, lids, covers, and the like) shall be possible only under one of the following conditions:	-	-
	a) The use of a key or tool is necessary for access.	Tool and key have been used for the skilled person.	<b>Pass</b>
	All live parts, (including those on the inside of doors) that are likely to be touched when resetting or adjusting devices intended for such operations while the equipment is still connected, shall be protected against contact to at least IP2X or IPXXB. Other live parts on the inside of doors shall be protected against unintentional direct contact to at least IP1X or IPXXA.	IP 2X has been used for the skilled person.	<b>Pass</b>
	b) The disconnection of live parts inside the enclosure before the enclosure can be opened. This may be accomplished by interlocking the door with a disconnecting device (for example, the supply disconnecting device) so that the door can only be opened when the disconnecting device is open and so that the disconnecting	By the use of hand-operated power disconnection device the requirement of this clause could be ensured.	<b>Pass</b>

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Clause	Requirement - test	Result	Verdict
	device can only be closed when the door is closed.		
	Exception: a key or tool as prescribed by the supplier can be used to defeat the interlock provided that the following conditions are met:	-	-
	- it is possible at all times while the interlock is defeated to open the disconnecting device and lock the disconnecting device in the OFF (isolated) position or otherwise prevent unauthorised closure of the disconnecting device;	It met the requirement	<b>Pass</b>
	- upon closing the door, the interlock is automatically restored;	It met the requirement	<b>Pass</b>
	- all live parts, that are likely to be touched when resetting or adjusting devices intended for such operations while the equipment is still connected, are protected against direct contact to at least IP2X or IPXXB and other live parts on the inside of doors are protected against direct contact to at least IP1X or IPXXA;	No this situation.	<b>N/A</b>
	- relevant information about the procedures for the defeat of the interlock is provided with the instructions for use of the electrical equipment (see Clause 17).	No this situation.	<b>N/A</b>
	- means are provided to restrict access to live parts behind doors that are not directly interlocked with the disconnecting means to skilled or instructed persons. (See 17.2 b)).	It met the requirement	<b>Pass</b>
	All parts that are still live after switching off the disconnecting device(s) (see 5.3.5) shall be protected against direct contact to at least IP2X or IPXXB (see IEC 60529). Such parts shall be marked with a warning sign in accordance with 16.2.1 (see also 13.2.4 for identification of conductors by colour), except for:	IP 2X has been used for the protection of cable inlet connection.	<b>Pass</b>
	- parts that can be live only because of connection to interlocking circuits and that are distinguished by colour as potentially live in accordance with 13.2.4;	No this situation.	<b>N/A</b>
	- the supply terminals of the supply disconnecting device when the latter is mounted alone in a separate enclosure.	No this situation.	<b>N/A</b>



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Clause	Requirement - test	Result	Verdict
	c) Opening without the use of a key or a tool and without disconnection of live parts shall be possible only when all live parts are protected against contact to at least IP2X or IPXXB (see IEC 60529). Where barriers provide this protection, either they shall require a tool for their removal or all live parts protected by them shall be automatically disconnected when the barrier is removed. Where protection against contact is achieved in accordance with 6.2.2 c), and a hazard can be caused by manual actuation of devices (for example manual closing of contactors or relays), such actuation should be prevented by barriers or obstacles that require a tool for their removal.	No this situation.	N/A
6.2.3	Protection by insulation of live parts	-	-
	Live parts shall be covered by insulation which can only be removed by destruction	Live part has been covered appropriately.	<b>Pass</b>
	Such insulation shall withstand the mechanical, chemical, electrical and thermal stresses under normal service conditions	Insulation could withstand the mechanical stress under normal service conditions.	<b>Pass</b>
6.2.4	Protection against residual voltages	-	-
	Live parts having a residual voltage greater than 60 V when the supply is disconnected shall be discharged to 60 V or less within a time period of 5 s provided that this rate of discharge does not interfere with the proper functioning of the equipment. Exempted from this requirement are components having a stored charge of 60 $\mu$ C or less. Where this specified rate of discharge would interfere with the proper functioning of the equipment, a durable warning notice drawing attention to the hazard and stating the delay required before the enclosure may be opened shall be displayed at an easily visible location on or immediately adjacent to the enclosure that contains the live parts.	In any situation, the voltage could even drop to 0V within one second.	<b>Pass</b>
	In the case of plugs or similar devices, the withdrawal of which results in the exposure of conductors (for example pins), the discharge time to 60 V shall not exceed 1 s, otherwise such	No this situation.	N/A

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Clause	Requirement - test	Result	Verdict
	conductors shall be protected to at least IP2X or IPXXB. If neither a discharge time of 1 s nor a protection of at least IP2X or IPXXB can be achieved (for example in the case of removable collectors on conductor wires, conductor bars, or slip-ring assemblies, see 12.7.4), additional switching devices or an appropriate warning, for example a warning sign drawing attention to the hazard and stating the delay required shall be provided. When the equipment is located in places open to all persons, which can include children, warnings are not sufficient and therefore a minimum degree of protection against contact with live parts to IP4X or IPXXD is required.		
6.2.5	Protection by barriers	-	-
	For protection by barriers, the requirements of IEC 60364-4-41 shall apply.	No this situation.	N/A
6.2.6	Protection by placing out of reach or protection by obstacles	-	-
	protection by obstacles, the requirements of IEC 60364-4-41 shall apply.	No this situation.	N/A
	For conductor wire systems or conductor bar systems with a degree of protection less than IP2X or IPXXB, see 12.7.1.	No this situation.	N/A
6.3	Fault protection	-	-
6.3.1	General	-	-
	Fault protection (3.31) is intended to prevent hazardous situations due to an insulation fault between live parts and exposed conductive parts.	It met the requirement	Pass
	For each circuit or part of the electrical equipment, at least one of the measures in accordance with 6.3.2 to 6.3.3 shall be applied:	-	-
	- measures to prevent the occurrence of a touch voltage (6.3.2); or	It met the requirement	Pass
	- automatic disconnection of the supply before the time of contact with a touch voltage can become hazardous (6.3.3).	No this situation.	N/A
6.3.2	Prevention of the occurrence of a touch voltage	-	-
6.3.2.1	General	-	-
	Measures to prevent the occurrence of a touch voltage include the following:	-	-

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	- provision of class II equipment or by equivalent insulation;	By equivalent insulation.	<b>Pass</b>
	- electrical separation.	No this situation.	<b>N/A</b>
6.3.2.2	Protection by provision of class II equipment or by equivalent insulation	-	-
	This measure is intended to prevent the occurrence of touch voltages on the accessible parts through a fault in the basic insulation.	It met the requirement	<b>Pass</b>
	This protection is provided by one or more of the following:	-	-
	- class II electrical devices or apparatus (double insulation, reinforced insulation or by equivalent insulation in accordance with IEC 61140);	By equivalent insulation.	<b>Pass</b>
	- switchgear and controlgear assemblies having total insulation in accordance with IEC 61439-1;	No this situation.	<b>N/A</b>
	- supplementary or reinforced insulation in accordance with IEC 60364-4-41.	No this situation.	<b>N/A</b>
6.3.2.3	Protection by electrical separation	-	-
	Electrical separation of an individual circuit is intended to prevent a touch voltage through contact with exposed conductive parts that can be energized by a fault in the basic insulation of the live parts of that circuit.	Appropriate electrical separation has been used for this machine.	<b>Pass</b>
	For this type of protection, the requirements of IEC 60364-4-41 apply.	It met the requirement	<b>Pass</b>
6.3.3	Protection by automatic disconnection of supply	-	-
	Automatic disconnection of the supply of any circuit affected by an insulation fault is intended to prevent a hazardous situation resulting from a touch voltage.	No this situation.	<b>N/A</b>
	This measure consists of the interruption of one or more of the line conductors by the automatic operation of a protective device in case of a fault. This interruption shall occur within a sufficiently short time to limit the duration of a touch voltage to a time within the limits specified in Annex A for TN and TT systems.	No this situation.	<b>N/A</b>
	This measure necessitates co-ordination between:	-	-
	- the type of supply system, the supply source impedance and the earthing system;	No this situation.	<b>N/A</b>
	- the impedance values of the different elements	No this situation.	<b>N/A</b>

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	of the line and of the associated fault current paths through the protective bonding circuit;		
	- the characteristics of the protective devices that detect insulation fault(s).	No this situation.	N/A
	This protective measure comprises both:	-	-
	- protective bonding of exposed conductive parts (see 8.2.3),	No this situation.	N/A
	- and one of the following:	-	-
	a) In TN systems, the following protective devices may be used: <ul style="list-style-type: none"> <li>• overcurrent protective devices;</li> <li>• residual current protective devices (RCDs) and associated overcurrent protective device(s).</li> </ul>	No this situation.	N/A
	b) in TT systems, either: <ul style="list-style-type: none"> <li>• RCDs and associated overcurrent protective device(s) to initiate the automatic disconnection of the supply on detection of an insulation fault from a live part to exposed conductive parts or to earth, or</li> <li>• overcurrent protective devices may be used for fault protection provided a suitably low value of the fault loop impedance <math>Z_s</math> (see A.2.2.3) is permanently and reliably assured;</li> </ul>	No this situation.	N/A
	c) In IT systems the relevant requirements of IEC 60364-4-41 shall be fulfilled. During an insulation fault, an acoustic and optical signal shall be sustained. After annunciation, the acoustic signal may then be manually muted. This can require an agreement between the supplier and user regarding the provision of insulation monitoring devices and/or insulation fault location system(s).	No this situation.	N/A
	Where automatic disconnection is provided in accordance with a), and disconnection within the time specified in A.1.1 cannot be assured, supplementary protective bonding shall be provided as necessary to meet the requirements of A.1.3.	No this situation.	N/A
	Where a power drive system (PDS) is provided, fault protection shall be provided for those circuits of the power drive system that are	No this situation.	N/A

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	supplied by the converter. Where this protection is not provided within the converter, the necessary protection measures shall be in accordance with the converter manufacturer's instructions.		
6.4	Protection by the use of PELV	-	-
6.4.1	General requirements	-	-
	The use of PELV (Protective Extra-Low Voltage) is to protect persons against electric shock from indirect contact and limited area direct contact (see 8.2.1).	It met the requirement	<b>Pass</b>
	PELV circuits shall satisfy all of the following conditions:	-	-
	a) the nominal voltage shall not exceed:	-	-
	<ul style="list-style-type: none"> <li>• 25 V a.c. r.m.s. or 60 V ripple-free d.c. when the equipment is normally used in dry locations and when large area contact of live parts with the human body is not expected; or</li> </ul>	It met the requirement	<b>Pass</b>
	<ul style="list-style-type: none"> <li>• 6 V a.c. r.m.s. or 15 V ripple-free d.c. in all other cases;</li> </ul>	No this situation.	<b>N/A</b>
	b) one side of the circuit or one point of the source of the supply of that circuit shall be connected to the protective bonding circuit;	It met the requirement	<b>Pass</b>
	c) live parts of PELV circuits shall be electrically separated from other live circuits. Electrical separation shall be not less than that required between the primary and secondary circuits of a safety isolating transformer (see IEC 61558-1 and IEC 61558-2-6);	It met the requirement	<b>Pass</b>
	d) conductors of each PELV circuit shall be physically separated from those of any other circuit. When this requirement is impracticable, the insulation provisions of 13.1.3 shall apply;	It met the requirement	<b>Pass</b>
	e) plugs and socket-outlets for a PELV circuit shall conform to the following:	-	-
	<ul style="list-style-type: none"> <li>• plugs shall not be able to enter socket-outlets of other voltage systems;</li> </ul>	No this situation.	<b>N/A</b>
	<ul style="list-style-type: none"> <li>• socket-outlets shall not admit plugs of other voltage systems.</li> </ul>	No this situation.	<b>N/A</b>
6.4.2	Sources for PELV	-	-

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	The source for PELV shall be one of the following:	-	-
	- a safety isolating transformer in accordance with IEC 61558-1 and IEC 61558-2-6;	No this situation.	N/A
	- a source of current providing a degree of safety equivalent to that of the safety isolating transformer (for example a motor generator with winding providing equivalent isolation);	It met the requirement	Pass
	- an electrochemical source (for example a battery) or another source independent of a higher voltage circuit (for example a diesel-driven generator);	No this situation.	N/A
	- an electronic power supply conforming to appropriate standards specifying measures to be taken to ensure that, even in the case of an internal fault, the voltage at the outgoing terminals cannot exceed the values specified in 6.4.1.	No this situation.	N/A
7	Protection of equipment	-	-
7.1	General	-	-
	This Clause 7 details the measures to be taken to protect equipment against the effects of:	-	-
	- overcurrent arising from a short circuit;	It met the requirement	Pass
	- overload and/or loss of cooling of motors;	It met the requirement	Pass
	- abnormal temperature;	It met the requirement	Pass
	- loss of or reduction in the supply voltage;	It met the requirement	Pass
	- overspeed of machines/machine elements;	It met the requirement	Pass
	- earth fault/residual current;	It met the requirement	Pass
	- incorrect phase sequence;	It met the requirement	Pass
	- overvoltage due to lightning and switching surges.	It met the requirement	Pass
7.2	Overcurrent protection	-	-
7.2.1	General	-	-
	Overcurrent protection shall be provided where the current in a machine circuit can exceed either the rating of any component or the current carrying capacity of the conductors, whichever is the lesser value. The ratings or settings to be selected are detailed in 7.2.10.	It met the requirement	Pass
7.2.2	Supply conductors	-	-
	Unless otherwise specified by the user, the	The manufacturer does not provide the	Pass

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	supplier of the electrical equipment is not responsible for providing the overcurrent protective device for the supply conductors to the electrical equipment.	over-current protection for the whole machine.	
	The supplier of the electrical equipment shall state on the installation diagram the data necessary for selecting the overcurrent protective device (see 7.2.10 and 17.4).	The data necessary for over current protective device is provided in the electrical installation diagram.	<b>Pass</b>
7.2.3	Power circuits	-	-
	Devices for detection and interruption of overcurrent, selected in accordance with 7.2.10, shall be applied to each live conductor including circuits supplying control circuit transformers.	Each power circuit has their overcurrent protective device.	<b>Pass</b>
	The following conductors, as applicable, shall not be disconnected without disconnecting all associated live conductors:	-	-
	- the neutral conductor of AC power circuits;	It met the requirement	<b>Pass</b>
	- the earthed conductor of DC power circuits;	No this situation.	<b>N/A</b>
	- DC power conductors bonded to exposed conductive parts of mobile machines.	It met the requirement	<b>Pass</b>
	Where the cross-sectional area of the neutral conductor is at least equal to or equivalent to that of the phase conductors, it is not necessary to provide overcurrent detection for the neutral conductor nor a disconnecting device for that conductor. For a neutral conductor with a cross-sectional area smaller than that of the associated phase conductors, the measures detailed in 524 of IEC 60364-5-52 shall apply.	The cross-section area of neutral conductor is 6mm <sup>2</sup>	<b>Pass</b>
	In IT systems, it is recommended that the neutral conductor is not used. However, where a neutral conductor is used, the measures detailed in 431.2.2 of IEC 60364-4-43 shall apply.	No this situation.	<b>N/A</b>
7.2.4	Control circuits	-	-
	Conductors of control circuits directly connected to the supply voltage and of circuits supplying control circuit transformers shall be protected against overcurrent in accordance with 7.2.3.	No this situation.	<b>N/A</b>
	Conductors of control circuits supplied by a control circuit transformer or d.c. supply shall be protected against overcurrent (see also 9.4.3.1):	-	-

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	- in control circuits connected to the protective bonding circuit, by inserting an overcurrent protective device into the switched conductor;	It met the requirement	<b>Pass</b>
	- in control circuits not connected to the protective bonding circuit;	Not applicable.	<b>N/A</b>
	• where all control circuits of the equipment have the same current carrying capacity, by inserting an overcurrent protective device into the switched conductor, or;	Not applicable.	<b>N/A</b>
	• where different control circuits of the equipment have different current carrying capacity, by inserting an overcurrent protective device into both switched and common conductors of each control circuit.	Not applicable.	<b>N/A</b>
	Exception: Where the supply unit provides current limiting below the current carrying capacity of the conductors in a circuit and below the current rating of connected components, no separate overcurrent protective device is required.	Not applicable.	<b>N/A</b>
7.2.5	Socket outlets and their associated conductors	-	-
	Overcurrent protection shall be provided for the circuits feeding the general purpose socket outlets intended primarily for supplying power to maintenance equipment. Overcurrent protective devices shall be provided in the unearthed live conductors of each circuit feeding such socket outlets.	No socket outlet is used for this machine.	<b>N/A</b>
7.2.6	Lighting circuits	-	-
	All unearthed conductors of circuits supplying lighting shall be protected against the effects of short circuits by the provision of overcurrent devices separate from those protecting other circuits	No lighting circuit is used for this machine.	<b>N/A</b>
7.2.7	Transformers	-	-
	Transformers shall be protected against overcurrent in accordance with the manufacturer's instructions. Such protection shall (see also 7.2.10):	No this situation.	<b>N/A</b>
	- avoid nuisance tripping due to transformer magnetizing inrush currents;	No this situation.	<b>N/A</b>
	- avoid a winding temperature rise in excess of	No this situation.	<b>N/A</b>



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Clause	Requirement - test	Result	Verdict
	the permitted value for the insulation class of transformer when it is subjected to the effects of a short circuit at its secondary terminals.		
7.2.8	Location of overcurrent protective devices	-	-
	An overcurrent protective device shall be located at the point where a reduction in the cross-sectional area of the conductors or another change reduces the current-carrying capacity of the conductors, except where all the following conditions are satisfied:	It met the requirement	<b>Pass</b>
	- the current carrying capacity of the conductors is at least equal to that of the load;	It met the requirement	<b>Pass</b>
	- the part of the conductor between the point of reduction of current-carrying capacity and the position of the overcurrent protective device is no longer than 3 m;	It met the requirement	<b>Pass</b>
	- the conductor is installed in such a manner as to reduce the possibility of a short-circuit, for example, protected by an enclosure or duct.	It met the requirement	<b>Pass</b>
7.2.9	Overcurrent protective devices	-	-
	The rated short-circuit breaking capacity shall be at least equal to the prospective fault current at the point of installation. Where the short-circuit current to an overcurrent protective device can include additional currents other than from the supply (for example from motors, from power factor correction capacitors), those currents shall be taken into consideration.	It met the requirement	<b>Pass</b>
	Where fuses are provided as overcurrent protective devices, a type readily available in the country of use shall be selected, or arrangements shall be made for the supply of spare parts.	No fuse is used for this machine.	<b>N/A</b>
7.2.10	Rating and setting of overcurrent protective devices	-	-
	The rated current of fuses or the setting current of other overcurrent protective devices shall be selected as low as possible but adequate for the anticipated overcurrents (for example during starting of motors or energizing of transformers). When selecting those protective devices, consideration shall be given to the protection of	The rating and setting of overcurrent protective device is appropriate.	<b>Pass</b>

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	switching devices against damage due to overcurrents.		
	The rated current or setting of an overcurrent protective device for conductors is determined by the current carrying capacity of the conductors to be protected in accordance with 12.4, Clause D.3 and the maximum allowable interrupting time t in accordance with Clause D.4, taking into account the needs of co-ordination with other electrical devices in the protected circuit.	The rating and setting of overcurrent protective device is appropriate.	<b>Pass</b>
7.3	Protection of motors against overheating	-	-
7.3.1	General	-	-
	Protection of motors against overheating shall be provided for each motor rated at more than 0,5 kW.	It met the requirement	<b>Pass</b>
	Exceptions: In applications where an automatic interruption of the motor operation is unacceptable (for example fire pumps), the means of detection shall give a warning signal to which the operator can respond.	No this situation.	<b>N/A</b>
	Protection of motors against overheating can be achieved by:	-	-
	- overload protection (7.3.2),	It met the requirement	<b>Pass</b>
	- over-temperature protection (7.3.3), or	No this situation.	<b>N/A</b>
	- current-limiting protection (7.3.4).	No this situation.	<b>N/A</b>
	Automatic restarting of any motor after the operation of protection against overheating shall be prevented where this can cause a hazardous situation or damage to the machine or to the work in progress	Automatic restarting of any motor after the operation of overload protection is prevented.	<b>Pass</b>
7.3.2	Overload protection	-	-
	Where overload protection is provided, detection of overload(s) shall be provided in each live conductor except for the neutral conductor.	Detection of overload has been provided in each live conductor excepted for the neutral conductor.	<b>Pass</b>
	However, where the motor overload detection is not used for cable overload protection (see also Clause D.2), the number of overload detection devices may be reduced at the request of the user (see also Annex B). For motors having single-phase or d.c. power supplies, detection in only	It met the requirement.	<b>Pass</b>

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	one unearthed live conductor is permitted.		
	Where overload protection is achieved by switching off, the switching device shall switch off all live conductors. The switching of the neutral conductor is not necessary for overload protection.	The switching device has been switched off all live conductors.	<b>Pass</b>
	Where motors with special duty ratings are required to start or to brake frequently (for example, motors for rapid traverse, locking, rapid reversal, sensitive drilling) it can be difficult to provide overload protection with a time constant comparable with that of the winding to be protected. Appropriate protective devices designed to accommodate special duty motors or over-temperature protection (see 7.3.3) can be necessary.	No this situation.	<b>N/A</b>
	For motors that cannot be overloaded (for example torque motors, motion drives that either are protected by mechanical overload protection devices or are adequately dimensioned), overload protection is not required.	No this situation.	<b>N/A</b>
7.3.3	Over-temperature protection	-	-
	The provision of motors with over-temperature protection (see IEC 60034-11) is recommended in situations where the cooling can be impaired (for example dusty environments). Depending upon the type of motor, protection under stalled rotor or loss of phase conditions is not always ensured by over-temperature protection, and additional protection should then be provided.	No this situation.	<b>N/A</b>
	Over-temperature protection is also recommended for motors that cannot be overloaded (for example torque motors, motion drives that are either protected by mechanical overload protection devices or are adequately dimensioned), where the possibility of over-temperature exists (for example due to reduced cooling).	No this situation.	<b>N/A</b>
7.4	Protection against abnormal temperature	-	-
	Equipment shall be protected against abnormal temperatures that can result in a hazardous	It met the requirement.	<b>Pass</b>

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Clause	Requirement - test	Result	Verdict
	situation.		
7.5	Protection against the effects of supply interruption or voltage reduction and subsequent restoration	-	-
	Where a supply interruption or a voltage reduction can cause a hazardous situation, damage to the machine, or to the work in progress, undervoltage protection shall be provided by, for example, switching off the machine at a predetermined voltage level.	No under-voltage protection is used for this machine.	N/A
	Where the operation of the machine can allow for an interruption or a reduction of the voltage for a short time period, delayed undervoltage protection may be provided. The operation of the undervoltage device shall not impair the operation of any stopping control of the machine.	No under-voltage protection is used for this machine.	N/A
	Upon restoration of the voltage or upon switching on the incoming supply, automatic or unexpected restarting of the machine shall be prevented where such a restart can cause a hazardous situation.	Automatic or unexpected restarting of the machine has been prevented.	Pass
	Where only a part of the machine or of the group of machines working together in a co-ordinated manner is affected by the voltage reduction or supply interruption, the undervoltage protection shall initiate appropriate control responses to ensure co-ordination.	No under-voltage protection is used for this machine.	N/A
7.6	Motor overspeed protection	-	-
	Overspeed protection shall be provided where overspeeding can occur and could possibly cause a hazardous situation taking into account measures in accordance with 9.3.2. Overspeed protection shall initiate appropriate control responses and shall prevent automatic restarting.	No motor over-speed protection is used for this machine.	N/A
	The overspeed protection should operate in such a manner that the mechanical speed limit of the motor or its load is not exceeded.	No motor over-speed protection is used for this machine.	N/A
7.7	Additional earth fault/residual current protection	-	-
	In addition to providing overcurrent protection for automatic disconnection as described in 6.3, earth fault/residual current protection can be	No this situation.	N/A

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	provided to reduce damage to equipment due to earth fault currents less than the detection level of the overcurrent protection.		
	The setting of the devices shall be as low as possible consistent with correct operation of the equipment.	It met the requirement.	<b>Pass</b>
	If fault currents with DC components are possible, an RCD of type B in accordance with IEC TR 60755 can be required.	No this situation.	<b>N/A</b>
7.8	Phase sequence protection	-	-
	Where an incorrect phase sequence of the supply voltage can cause a hazardous situation or damage to the machine, protection shall be provided.	No this situation.	<b>N/A</b>
7.9	Protection against overvoltages due to lightning and to switching surges	-	-
	Surge protective devices (SPDs) can be provided to protect against the effects of overvoltages due to lightning or to switching surges.	No additional protection for this purpose is provided.	<b>N/A</b>
	Where provided:	-	-
	- SPDs for the suppression of overvoltages due to lightning shall be connected to the incoming terminals of the supply disconnecting device.	No this situation.	<b>N/A</b>
	- SPDs for the suppression of overvoltages due to switching surges shall be connected as necessary for equipment requiring such protection.	No this situation.	<b>N/A</b>
7.10	Short-circuit current rating		
	The short-circuit current rating of the electrical equipment shall be determined. This can be done by the application of design rules or by calculation or by test.	It met the requirement.	<b>Pass</b>
8	Equipotential bonding	-	-
8.1	General	-	-
	This Clause 8 provides requirements for both protective bonding and functional bonding. Figure 4 illustrates those concepts.	It met the requirement	<b>Pass</b>
	Protective bonding is a basic provision for fault protection to enable protection of persons against electric shock from indirect contact (see 6.3.3 and 8.2).	It met the requirement	<b>Pass</b>
	The objective of functional bonding (see 8.4) is	-	-

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	to minimize:		
	- the consequence of an insulation failure which could affect the operation of the machine;	It met the requirement.	<b>Pass</b>
	- electrical disturbances to sensitive electrical equipment which could affect the operation of the machine;	No this situation.	<b>N/A</b>
	- induced currents from lightning which could damage the electric equipment.	No this situation.	<b>N/A</b>
	Functional bonding is achieved by connection to the protective bonding circuit, but where the level of electrical disturbances on the protective bonding circuit is not sufficiently low for proper functioning of electrical equipment, it can be necessary to use separate conductors for protective and functional bonding.	It met the requirement.	<b>Pass</b>
8.2	Protective bonding circuit	-	-
8.2.1	General	-	-
	The protective bonding circuit consists of the interconnection of:	-	-
	• PE terminal(s) (see 5.2);	It met the requirement.	<b>Pass</b>
	• the protective conductors in the equipment of the machine including sliding contacts where they are part of the circuit;	No this situation.	<b>N/A</b>
	• the conductive structural parts and exposed conductive parts of the electrical equipment;	No this situation.	<b>N/A</b>
	• conductive structural parts of the machine.	No this situation.	<b>N/A</b>
	All parts of the protective bonding circuit shall be so designed that they are capable of withstanding the highest thermal and mechanical stresses that can be caused by earth-fault currents that could flow in that part of the protective bonding circuit.	All parts of the protective bonding circuit are so designed that they are capable of withstanding the highest thermal and mechanical stresses.	<b>Pass</b>
	The cross-sectional area of every protective conductor which does not form part of a cable or which is not in a common enclosure with the line conductor shall be not less than – 2,5 mm <sup>2</sup> Cu or 16 mm <sup>2</sup> Al if protection against mechanical damage is provided, – 4 mm <sup>2</sup> Cu or 16 mm <sup>2</sup> Al if protection against mechanical damage is not provided.	It met the requirement.	<b>Pass</b>
	A protective conductor not forming part of a cable is considered to be mechanically protected	It met the requirement.	<b>Pass</b>

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	if it is installed in a conduit, trunking or protected in a similar way. Conductive structural parts of equipment in accordance with 6.3.2.2 need not be connected to the protective bonding circuit. Conductive structural parts of the machine need not be connected to the protective bonding circuit where all the equipment provided is in accordance with 6.3.2.2.		
	Exposed conductive parts of equipment in accordance with 6.3.2.3 shall not be connected to the protective bonding circuit.	Exposed conductive parts of equipment in accordance with 6.3.2.3 has been connected to the protective bonding circuit.	<b>Pass</b>
	It is not necessary to connect exposed conductive parts to the protective bonding circuit where those parts are mounted so that they do not constitute a hazard because:	It met the requirement.	<b>Pass</b>
	– they cannot be touched on large surfaces or grasped with the hand and they are small in size (less than approximately 50 mm × 50 mm); or	No this situation.	<b>N/A</b>
	– they are located so that either contact with live parts, or an insulation failure, is unlikely.	It met the requirement.	<b>Pass</b>
	This applies to small parts such as screws, rivets, and nameplates and to parts inside an enclosure, irrespective of their size (for example electromagnets of contactors or relays and mechanical parts of devices).	No this situation.	<b>N/A</b>
8.2.2	Protective conductors	-	-
	Protective conductors shall be identified in accordance with 13.2.2.	Appropriate identification has been made in accordance with 13.2.2	<b>Pass</b>
	Copper conductors are preferred. Where a conductor material other than copper is used, its electrical resistance per unit length shall not exceed that of the allowable copper conductor and such conductors shall be not less than 16 mm <sup>2</sup> in cross-sectional area for reasons of mechanical durability.	Copper conductors are used.	<b>Pass</b>
	Metal enclosures or frames or mounting plates of electrical equipment, connected to the protective bonding circuit, may be used as protective conductors if they satisfy the following	It met the requirement.	<b>Pass</b>

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	<p>three requirements:</p> <ul style="list-style-type: none"> <li>• their electrical continuity shall be assured by construction or by suitable connection so as to ensure protection against mechanical, chemical or electrochemical deterioration;</li> <li>• they comply with the requirements of 543.1 of IEC 60364-5-54:2011;</li> <li>• they shall permit the connection of other protective conductors at every predetermined tap-off point.</li> </ul>		
	<p>The cross-sectional area of protective conductors shall either be calculated in accordance with 543.1.2 of IEC 60364-5-54:2011, or selected in accordance with Table 1 (see 5.2). See also 8.2.6. and 17.2 (d) of this document.</p>	It met the requirement.	<b>Pass</b>
	<p>Each protective conductor shall:</p> <ul style="list-style-type: none"> <li>• be part of a multicore cable, or;</li> <li>• be in a common enclosure with the line conductor, or;</li> <li>• have a cross-sectional area of at least;</li> <li>• 2,5 mm<sup>2</sup> Cu or 16 mm<sup>2</sup> Al if protection against mechanical damage is provided;</li> <li>• 4 mm<sup>2</sup> Cu or 16 mm<sup>2</sup> Al if protection against mechanical damage is not provided.</li> </ul>	It met the requirement.	<b>Pass</b>
	<p>A protective conductor not forming part of a cable is considered to be mechanically protected if it is installed in a conduit, trunking or protected in a similar way.</p>	It met the requirement.	<b>Pass</b>
	<p>The following parts of the machine and its electrical equipment shall be connected to the protective bonding circuit but shall not be used as protective conductors:</p> <ul style="list-style-type: none"> <li>• conductive structural parts of the machine;</li> <li>• metal ducts of flexible or rigid construction;</li> <li>• metallic cable sheaths or armouring;</li> <li>• metallic pipes containing flammable materials such as gases, liquids, powder.</li> <li>• flexible or pliable metal conduits;</li> <li>• constructional parts subject to mechanical stress in normal service;</li> <li>• flexible metal parts; support wires; cable trays</li> </ul>	It met the requirement.	<b>Pass</b>



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	and cable ladders.		
8.2.3	Continuity of the protective bonding circuit	-	-
	Where a part is removed for any reason (for example routine maintenance), the protective bonding circuit for the remaining parts shall not be interrupted.	No this situation.	<b>N/A</b>
	Connection and bonding points shall be so designed that their current-carrying capacity is not impaired by mechanical, chemical, or electrochemical influences. Where enclosures and conductors of aluminium or aluminium alloys are used, particular consideration should be given to the possibility of electrolytic corrosion.	No this situation.	<b>N/A</b>
	Where the electrical equipment is mounted on lids, doors, or cover plates, continuity of the protective bonding circuit shall be ensured and a protective conductor (see 8.2.2) is recommended. Where a protective conductor is not provided, fastenings, hinges or sliding contacts designed to have a low resistance shall be used (see 18.2.2, Test 1).	No this situation.	<b>N/A</b>
	The continuity of conductors in cables that are exposed to damage (for example flexible trailing cables) shall be ensured by appropriate measures (for example monitoring).	No this situation.	<b>N/A</b>
	For requirements for the continuity of conductors using conductor wires, conductor bars and slip-ring assemblies, see 12.7.2.	No this situation.	<b>N/A</b>
	The protective bonding circuit shall not incorporate a switching device, an overcurrent protective device (for example switch, fuse), or other means of interruption.	No this situation.	<b>N/A</b>
	Exception: links that cannot be opened without the use of a tool and that are located in an enclosed electrical operating area may be provided for test or measurement purposes.	No this situation.	<b>N/A</b>
	Where the continuity of the protective bonding circuit can be interrupted by means of removable current collectors or plug/socket combinations, the protective bonding circuit shall be interrupted by a first make last break contact. This also	No this situation.	<b>N/A</b>

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	applies to removable or withdrawable plug-in units (see also 13.4.5).		
8.2.4	Protective conductor connecting points	-	-
	All protective conductors shall be terminated in accordance with 13.1.1. The protective conductor connecting points shall have no other function and are not intended, for example, to attach or connect appliances or parts.	It is in compliance with this requirement.	<b>Pass</b>
	Each protective conductor connecting point shall be marked or labelled as such using the symbol IEC 60417-5019:2006-08 as illustrated in: 	No this situation.	<b>N/A</b>
	or with the letters PE, the graphical symbol being preferred, or by use of the bicolour combination GREEN-AND-YELLOW, or by any combination of these.	It is in compliance with this requirement.	<b>Pass</b>
8.2.5	Mobile machines	-	-
	On mobile machines with on-board power supplies, the protective conductors, the conductive structural parts of the electrical equipment, and those extraneous conductive parts which form the structure of the machine shall all be connected to a protective bonding terminal to provide protection against electric shock. Where a mobile machine is also capable of being connected to an external incoming power supply, this protective bonding terminal shall be the connection point for the external protective conductor.	No this situation.	<b>N/A</b>
8.2.6	Additional requirements for electrical equipment having earth leakage currents higher than 10 mA	-	-
	Where electrical equipment has an earth leakage current that is greater than 10 mA AC or DC in any protective conductor, one or more of the following conditions for the integrity of each section of the associated protective bonding circuit that carries the earth leakage current shall be satisfied:	No this situation.	<b>N/A</b>
	a) the protective conductor is completely enclosed within electrical equipment enclosures or otherwise protected throughout its length against mechanical damage;	No this situation.	<b>N/A</b>

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	b) the protective conductor has a cross-sectional area of at least 10 mm <sup>2</sup> Cu or 16 mm <sup>2</sup> Al;	No this situation.	N/A
	c) where the protective conductor has a cross-sectional area of less than 10 mm <sup>2</sup> Cu or 16 mm <sup>2</sup> Al, a second protective conductor of at least the same cross-sectional area is provided up to a point where the protective conductor has a cross-sectional area not less than 10 mm <sup>2</sup> Cu or 16 mm <sup>2</sup> Al. This can require that the electrical equipment has a separate terminal for a second protective conductor.	No this situation.	N/A
	d) the supply is automatically disconnected in case of loss of continuity of the protective conductor;	No this situation.	N/A
	e) where a plug-socket combination is used, an industrial connector in accordance with IEC 60309 series, with adequate strain relief and a minimum protective earthing conductor cross-section of 2,5 mm <sup>2</sup> as part of a multi-conductor power cable is provided.	No this situation.	N/A
	A statement shall be given in the instructions for installation that the equipment shall be installed as described in this 8.2.6.	No this situation.	N/A
8.3	Measures to restrict the effects of high leakage current	-	-
	The effects of high leakage current can be restricted to the equipment having high leakage current by connection of that equipment to a dedicated supply transformer having separate windings. The protective bonding circuit shall be connected to exposed conductive parts of the equipment and, in addition, to the secondary winding of the transformer. The protective conductor(s) between the equipment and the secondary winding of the transformer shall comply with one or more of the arrangements described in 8.2.6.	It is in compliance with this requirement.	<b>Pass</b>
8.4	Functional bonding	-	-
	Protection against maloperation as a result of insulation failures can be achieved by connecting to a common conductor in accordance with	It is in compliance with this requirement.	<b>Pass</b>

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Clause	Requirement - test	Result	Verdict
	9.4.3.1.1.		
	For recommendations regarding functional bonding to avoid maloperation due to electromagnetic disturbances, see 4.4.2.	It is in compliance with this requirement.	<b>Pass</b>
	Functional bonding connecting points should be marked or labelled as such using the symbol IEC 60417-5020.	It is in compliance with this requirement.	<b>Pass</b>
9	Control circuits and control functions	-	-
9.1	Control circuits	-	-
9.1.1	Control circuit supply	-	-
	Where control circuits are supplied from an AC source, transformers having separate windings shall be used to separate the power supply from the control supply.	It is in compliance with this requirement.	<b>Pass</b>
	Examples include: • control transformers having separate windings in accordance with IEC 61558-2-2, • switch mode power supply units in accordance with IEC 61558-2-16 fitted with transformers having separate windings, • low voltage power supplies in accordance with IEC 61204-7 fitted with transformers having separate windings.	It is in compliance with this requirement.	<b>Pass</b>
	Where several transformers are used, it is recommended that the windings of those transformers be connected in such a manner that the secondary voltages are in phase.	It is in compliance with this requirement.	<b>Pass</b>
	Exception: Transformers or switch mode power supply units fitted with transformers are not mandatory for machines with a single motor starter and/or a maximum of two control devices (for example, interlock device, start/stop control station).	It is in compliance with this requirement.	<b>Pass</b>
	Where DC control circuits derived from an AC supply are connected to the protective bonding circuit (see 8.2.1), they shall be supplied from a separate winding of the AC control circuit transformer or by another control circuit transformer.	It is in compliance with this requirement.	<b>Pass</b>
9.1.2	Control circuit voltages	-	-
	The nominal value of the control voltage shall be	It is in compliance with this requirement.	<b>Pass</b>

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Clause	Requirement - test	Result	Verdict
	consistent with the correct operation of the control circuit.		
	The nominal voltage of AC control circuits should preferably not exceed – 230 V for circuits with 50 Hz nominal frequency, – 277 V for circuits with 60 Hz nominal frequency.	It is in compliance with this requirement.	<b>Pass</b>
	The nominal voltage of DC control circuits should preferably not exceed 220 V.	No this situation.	<b>N/A</b>
9.1.3	Protection	-	-
	Control circuits shall be provided with overcurrent protection in accordance with 7.2.4 and 7.2.10.	Appropriate overcurrent protective has been provided for the control circuit.	<b>Pass</b>
9.2	Control functions	-	-
9.2.1	General	-	-
9.2.2	Categories of stop functions	-	-
	There are three categories of stop functions as follows:	-	-
	– stop category 0: stopping by immediate removal of power to the machine actuators (i.e. an uncontrolled stop – see 3.1.64);	It is in compliance with this requirement.	<b>Pass</b>
	– stop category 1: a controlled stop (see 3.1.14) with power available to the machine actuators to achieve the stop and then removal of power when the stop is achieved;	No this situation.	<b>N/A</b>
	– stop category 2: a controlled stop with power remaining available to the machine actuators.	No this situation.	<b>N/A</b>
9.2.3	Operation	-	-
9.2.3.1	General	-	-
	Safety functions and/or protective measures (for example interlocks (see 9.3)) shall be provided where required to reduce the possibility of hazardous situations.	It is in compliance with this requirement.	<b>Pass</b>
	Where a machine has more than one control station, measures shall be provided to ensure that initiation of commands from different control stations do not lead to a hazardous situation.	It is in compliance with this requirement.	<b>Pass</b>
9.2.3.2	Start		
	Start functions shall operate by energizing the	It is in compliance with this requirement.	<b>Pass</b>

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Clause	Requirement - test	Result	Verdict
	relevant circuit.		
	The start of an operation shall be possible only when all relevant safety functions and/or protective measures are in place and are operational, except for conditions as described in 9.3.6.	It is in compliance with this requirement.	<b>Pass</b>
	For those machines (for example mobile machines) where safety functions and/or protective measures cannot be applied for certain operations, starting of such operations shall be by hold-to-run controls, together with enabling devices, as appropriate.	It is in compliance with this requirement.	<b>Pass</b>
	The provision of acoustic and/or visual warning signals before the starting of hazardous machine operation shall be considered during the risk assessment. Where the risk assessment determines that either or both are required the emission level of noise/light shall be suitable for the intended environment.	It is in compliance with this requirement.	<b>Pass</b>
	Suitable interlocks shall be provided where necessary for correct sequential starting.	It is in compliance with this requirement.	<b>Pass</b>
	In the case of machines requiring the use of more than one control station to initiate a start, each of these control stations shall have a separate manually actuated start control device. The conditions to initiate a start shall be: <ul style="list-style-type: none"> <li>• all required conditions for machine operation shall be met, and</li> <li>• all start control devices shall be in the released (off) position, then</li> <li>• all start control devices shall be actuated concurrently (see 3.1.7).</li> </ul>	No this situation.	<b>N/A</b>
9.2.3.3	Stop	-	-
	Stop category 0 and/or stop category 1 and/or stop category 2 stop functions shall be provided as indicated by the risk assessment and the functional requirements of the machine (see 4.1).	It is in compliance with this requirement.	<b>Pass</b>
	Stop functions shall override related start functions.	Stop functions have been override related start functions.	<b>Pass</b>
	Where more than one control station is provided, stop commands from any control station shall be	It is in compliance with this requirement.	<b>Pass</b>

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Clause	Requirement - test	Result	Verdict
	effective when required by the risk assessment of the machine.		
9.2.3.4	Emergency operations (emergency stop, emergency switching off)	-	-
9.2.3.4.1	General	-	-
	Emergency stop and emergency switching off are complementary protective measures that are not primary means of risk reduction for hazards (for example trapping, entanglement, electric shock or burn) at a machine (see ISO 12100).	It is in compliance with this requirement.	<b>Pass</b>
	This part of IEC 60204 specifies the requirements for the emergency stop and the emergency switching off functions of the emergency operations listed in Annex E, both of which are, in this part of IEC 60204, initiated by a single human action.	It is in compliance with this requirement.	<b>Pass</b>
	Once active operation of an emergency stop (see 10.8) or emergency switching off (see 10.8) actuator has ceased following a command, the effect of this command shall be sustained until it is reset. This reset shall be possible only by a manual action at that location where the command has been initiated. The reset of the command shall not restart the machinery but only permit restarting.	It is in compliance with this requirement.	<b>Pass</b>
	It shall not be possible to restart the machinery until all emergency stop commands have been reset. It shall not be possible to reenergize the machinery until all emergency switching off commands have been reset.	It is in compliance with this requirement.	<b>Pass</b>
9.2.3.4.2	Emergency stop	-	-
	Requirements for functional aspects of emergency stop equipment are given in ISO 13850.	It is in compliance with this requirement.	<b>Pass</b>
	The emergency stop shall function either as a stop category 0 or as a stop category 1 (see 9.2.2). The choice of the stop category of the emergency stop depends on the results of a risk assessment of the machine.	It is in compliance with this requirement.	<b>Pass</b>
	Exception: In some cases, to avoid creating additional risks, it can be necessary to perform a	It is in compliance with this requirement.	<b>Pass</b>

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Clause	Requirement - test	Result	Verdict
	controlled stop and maintain the power to machine actuators even after stopping is achieved. The stopped condition shall be monitored and upon detection of failure of the stopped condition, power shall be removed without creating a hazardous situation.		
	In addition to the requirements for stop given in 9.2.3.3, the emergency stop function has the following requirements:	-	-
	• it shall override all other functions and operations in all modes;	It is in compliance with this requirement.	<b>Pass</b>
	• it shall stop the hazardous motion as quickly as practicable without creating other hazards;	It is in compliance with this requirement.	<b>Pass</b>
	• reset shall not initiate a restart.	It is in compliance with this requirement.	<b>Pass</b>
9.2.5.4.3	Emergency switching off	-	-
	The functional aspects of emergency switching off are given in 536.4 of IEC 60364-5-53.	It is in compliance with this requirement.	<b>Pass</b>
	Emergency switching off should be provided where:	-	-
	• basic protection (for example for conductor wires, conductor bars, slip-ring assemblies, controlgear in electrical operating areas) is achieved only by placing out of reach or by obstacles (see 6.2.6); or	No this situation.	<b>N/A</b>
	• there is the possibility of other hazards or damage caused by electricity.	It is in compliance with this requirement.	<b>Pass</b>
	Emergency switching off is accomplished by switching off the relevant incoming supply by electromechanical switching devices, effecting a stop category 0 of machine actuators connected to this incoming supply. When a machine cannot tolerate this stop category 0 stop, it may be necessary to provide other measures, for example protection against direct contact, so that emergency switching off is not necessary.	It is in compliance with this requirement.	<b>Pass</b>
9.2.3.5	Operating modes	-	-
	Each machine can have one or more operating modes (for example manual mode, automatic mode, setting mode, maintenance mode) determined by the type of machine and its application.	Just one operating mode.	<b>N/A</b>



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Clause	Requirement - test	Result	Verdict
	Where machinery has been designed and constructed to allow its use in several control or operating modes requiring different protective measures and having a different impact on safety, it shall be fitted with a mode selector which can be locked in each position (for example key operated switch). Each position of the selector shall be clearly identifiable and shall correspond to a single operating or control mode.	No this situation.	N/A
	The selector may be replaced by another selection method which restricts the use of certain functions of the machinery to certain categories of operator (for example access code).	No this situation.	N/A
	Mode selection by itself shall not initiate machine operation. A separate actuation of the start control shall be required.	No this situation.	N/A
	For each specific operating mode, the relevant safety functions and/or protective measures shall be implemented.	No this situation.	N/A
	Indication of the selected operating mode shall be provided (for example the position of a mode selector, the provision of an indicating light, a visual display indication).	No this situation.	N/A
9.2.3.6	Monitoring of command actions	-	-
	Movement or action of a machine or part of a machine that can result in a hazardous situation shall be monitored by providing, for example, overtravel limiters, motor overspeed detection, mechanical overload detection or anti-collision devices.	It is in compliance with this requirement.	Pass
9.2.3.7	Hold-to-run controls	-	-
	Hold-to-run controls shall require continuous actuation of the control device(s) to achieve operation.	Not applicable.	N/A
9.2.3.8	Two-hand control	-	-
	Three types of two-hand control are defined in ISO 13851, the selection of which is determined by the risk assessment. These shall have the following features:	Not applicable.	N/A
	Type I: this type requires: <ul style="list-style-type: none"> <li>• the provision of two control devices and their</li> </ul>	Not applicable.	N/A

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Clause	Requirement - test	Result	Verdict
	concurrent actuation by both hands; <ul style="list-style-type: none"> <li>• continuous concurrent actuation during the hazardous situation;</li> <li>• machine operation shall cease upon the release of either one or both of the control devices when hazardous situations are still present.</li> </ul>		
	A Type I two-hand control device is not considered to be suitable for the initiation of hazardous operation.	Not applicable.	<b>N/A</b>
	Type II: a Type I control requiring the release of both control devices before machine operation can be reinitiated.	Not applicable.	<b>N/A</b>
	Type III: a Type II control requiring concurrent actuation of the control devices as follows: <ul style="list-style-type: none"> <li>• it shall be necessary to actuate the control devices within a certain time limit of each other, not exceeding 0,5 s;</li> <li>• where this time limit is exceeded, both control devices shall be released before machine operation can be initiated.</li> </ul>	Not applicable.	<b>N/A</b>
9.2.3.9	Enabling control	-	-
	Enabling control (see also 10.9) is a manually activated control function interlock that:	It is in compliance with this requirement.	<b>Pass</b>
	a) when activated allows a machine operation to be initiated by a separate start control, and	It is in compliance with this requirement.	<b>Pass</b>
	b) when de-activated <ul style="list-style-type: none"> <li>• initiates a stop function, and</li> <li>• prevents initiation of machine operation.</li> </ul>	It is in compliance with this requirement.	<b>Pass</b>
	Enabling control shall be so arranged as to minimize the possibility of defeating, for example by requiring the de-activation of the enabling control device before machine operation may be reinitiated.	It is in compliance with this requirement.	<b>Pass</b>
	Enabling control shall be so arranged as to minimize the possibility of defeating, for example by requiring the de-activation of the enabling control device before machine operation may be reinitiated.	It is in compliance with this requirement.	<b>Pass</b>
9.2.3.10	Combined start and stop controls	-	-
	Push-buttons and similar control devices that, when operated, alternately initiate and stop	Not applicable.	<b>N/A</b>

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Clause	Requirement - test	Result	Verdict
	motion shall only be provided for functions which cannot result in a hazardous situation.		
9.2.4	Cableless control system (CCS)	-	-
9.2.4.1	General requirements	-	-
	Subclause 9.2.4 deals with the functional requirements of control systems employing cableless (for example radio, infra-red) techniques for transmitting control signals and data between operator control station(s) and other parts of the control system(s).	No cableless control is used for this machine.	N/A
	Where a safety function of a CCS relies on data transmission the transmission reliability shall be considered.	No cableless control is used for this machine.	N/A
	The CCS shall have functionality and a response time suitable for the application based on the risk assessment.	No cableless control is used for this machine.	N/A
9.2.4.2	Monitoring the ability of a cableless control system to control a machine	-	-
	The ability of a cableless control system (CCS) to control a machine shall be automatically monitored, either continuously or at suitable intervals. The status of this ability shall be clearly indicated (for example, by an indicating light, a visual display indication, etc.)	No cableless control is used for this machine.	N/A
	If the communication signal is degraded in a manner that might lead to the loss of the ability of a CCS to control a machine (e.g., reduced signal level, low battery power) a warning to the operator shall be provided before the ability of the CCS to control a machine is lost.	No cableless control is used for this machine.	N/A
	When the ability of a CCS to control a machine has been lost for a time that is determined from a risk assessment of the application, an automatic stop of the machine shall be initiated.	No cableless control is used for this machine.	N/A
	Restoration of the ability of a CCS to control a machine shall not restart the machine. Restart shall require a deliberate action, for example manual actuation of a start button.	No cableless control is used for this machine.	N/A
9.2.4.3	Control limitation	-	-
	Measures shall be taken (e.g. coded transmission) to prevent the machine from responding to	No cableless control is used for this machine.	N/A

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	signals other than those from the intended cableless operator control station(s).		
	Cableless operator control station(s) shall only control the intended machine(s) and shall affect only the intended machine functions.	No cableless control is used for this machine.	N/A
9.2.4.4	Use of multiple cableless operator control stations	-	-
	When more than one cableless operator control station is used to control a machine, then:	No cableless control is used for this machine.	N/A
	<ul style="list-style-type: none"> <li>only one cableless operator control station shall be enabled at a time except as necessary for the operation of the machine;</li> </ul>	No cableless control is used for this machine.	N/A
	<ul style="list-style-type: none"> <li>transfer of control from one cableless operator control station to another shall require a deliberate manual action at the control station that has control;</li> </ul>	No cableless control is used for this machine.	N/A
	<ul style="list-style-type: none"> <li>during machine operation, transfer of control shall only be possible when both cableless operator control stations are set to the same mode of machine operation and/or function(s) of the machine;</li> </ul>	No cableless control is used for this machine.	N/A
	<ul style="list-style-type: none"> <li>transfer of control shall not change the selected mode of machine operation and/or function(s) of the machine;</li> </ul>	No cableless control is used for this machine.	N/A
	<ul style="list-style-type: none"> <li>each cableless operator control station that has control of the machine shall be provided with an indication that it has control (by for example, the provision of an indicating light, a visual display indication).</li> </ul>	No cableless control is used for this machine.	N/A
9.2.4.5	Portable cableless operator control stations	-	-
	Portable cableless operator control stations shall be provided with means (for example key operated switch, access code) to prevent unauthorized use.	No cableless control is used for this machine.	N/A
	Each machine under cableless control should have an indication when it is under cableless control.	No cableless control is used for this machine.	N/A
	When a portable cableless operator control station can be connected to one or more of several machines, means shall be provided on the portable cableless operator control station to	No cableless control is used for this machine.	N/A

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	select which machine(s) is to be connected. Selecting a machine to be connected shall not initiate control commands.		
9.2.4.6	Deliberate disabling of cableless operator control stations	-	-
	Where a cableless operator control station is disabled when under control, the associated machine shall meet the requirements for loss of ability of a CCS to control a machine in 9.2.4.2.	No cableless control is used for this machine.	N/A
	Where it is necessary to disable a cableless operator control station without interrupting machine operation, means shall be provided (for example on the cableless operator control station) to transfer control to another fixed or portable control station.	No cableless control is used for this machine.	N/A
9.2.4.7	Emergency stop devices on portable cableless operator control stations	-	-
	Emergency stop devices on portable cableless operator control stations shall not be the sole means of initiating the emergency stop function of a machine	No cableless control is used for this machine.	N/A
	Confusion between active and inactive emergency stop devices shall be avoided by appropriate design and information for use. See also ISO 13850.	No cableless control is used for this machine.	N/A
9.2.4.8	Emergency stop reset	-	-
	Restarting of cableless control after power loss, disabling and re-enabling, loss of communication, or failure of parts of the CCS shall not result in a reset of an emergency stop condition.	No cableless control is used for this machine.	N/A
	The instructions for use shall state that the reset of an emergency stop condition initiated by a portable cableless operator control station shall only be performed when it can be seen that the reason for initiation has been cleared.	No cableless control is used for this machine.	N/A
	Where the risk assessment show that resetting of an emergency stop actuator on the portable cableless operator control station is not adequate then one or more supplementary fixed resets shall be provided.	No cableless control is used for this machine.	N/A

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9.3	Protective interlocks	-	-
9.3.1	Reclosing or resetting of an interlocking safeguard	-	-
	The reclosing or resetting of an interlocking safeguard shall not initiate hazardous machine operation.	It met the requirement	<b>Pass</b>
9.3.2	Exceeding operating limits	-	-
	Where an operating limit (for example speed, pressure, position) can be exceeded leading to a hazardous situation, means shall be provided to detect when a predetermined limit(s) is exceeded and initiate an appropriate control action.	No this situation.	<b>N/A</b>
9.3.3	Operation of auxiliary functions	-	-
	The correct operation of auxiliary functions shall be checked by appropriate devices (for example pressure sensors).	No auxiliary operation is used.	<b>N/A</b>
	Where the non-operation of a motor or device for an auxiliary function can cause a hazardous situation, or cause damage to the machine or to the work in progress, appropriate interlocking shall be provided.	No auxiliary operation is used.	<b>N/A</b>
9.3.4	Interlocks between different operations and for contrary motions	-	-
	All contactors, relays, and other control devices that control elements of the machine and that can cause a hazardous situation when actuated at the same time (for example those which initiate contrary motion), shall be interlocked against incorrect operation.	No this situation.	<b>N/A</b>
	Reversing contactors (for example those controlling the direction of rotation of a motor) shall be interlocked in such a way that in normal service no short circuit can occur when switching.	No this situation.	<b>N/A</b>
	Where, for safety or for continuous operation, certain functions on the machine are required to be interrelated, proper co-ordination shall be ensured by suitable interlocks. For a group of machines working together in a co-ordinated manner and having more than one controller, provision shall be made to co-ordinate the	No this situation.	<b>N/A</b>

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Clause	Requirement - test	Result	Verdict
	operations of the controllers as necessary.		
	Where a failure of a mechanical brake actuator can result in the brake being applied when the associated machine actuator is energized and a hazardous situation can result, interlocks shall be provided to switch off the machine actuator.	No this situation.	N/A
9.3.5	Reverse current braking	-	-
	Where braking of a motor is accomplished by current reversal, measures shall be provided to prevent the motor starting in the opposite direction at the end of braking where that reversal can cause a hazardous situation or damage to the machine or to the work in progress. For this purpose, a device operating exclusively as a function of time is not permitted.	No reverse current braking is used for this machine.	N/A
	Control circuits shall be so arranged that rotation of a motor shaft, for example by applying a manual force or any other force causing the shaft to rotate after it has stopped, shall not result in a hazardous situation.	No reverse current braking is used for this machine.	N/A
9.3.6	Suspension of safety functions and/or protective measures	-	-
	Where it is necessary to suspend safety functions and/or protective measures (for example for setting or maintenance purposes), the control or operating mode selector shall simultaneously:	It met the requirement	Pass
	• disable all other operating (control) modes;	It met the requirement	Pass
	• permit operation only by the use of a hold-to-run device or by a similar control device positioned so as to permit sight of the hazardous elements;	It met the requirement	Pass
	• permit operation of the hazardous elements only in reduced risk conditions (e.g. reduced speed, reduced power / force, step-by-step operation, e.g. with a limited movement control device);	It met the requirement	Pass
	• prevent any operation of hazardous functions by voluntary or involuntary action on the machine's sensors.	It met the requirement	Pass
	If these four conditions cannot be fulfilled simultaneously, the control or operating mode selector shall activate other protective measures	Not applicable.	N/A

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	designed and constructed to ensure a safe intervention zone. In addition, the operator shall be able to control operation of the parts he is working on from the adjustment point.		
9.4	Control functions in the event of failure	-	-
9.4.1	General requirements	-	-
	Where failures or disturbances in the electrical equipment can cause a hazardous situation or damage to the machine or to the work in progress, appropriate measures shall be taken to minimize the probability of the occurrence of such failures or disturbances. The required measures and the extent to which they are implemented, either individually or in combination, depend on the level of risk associated with the respective application (see 4.1).	The appropriate provision has been provided.	<b>Pass</b>
	Examples of such measures that can be appropriate include but are not limited to: <ul style="list-style-type: none"> <li>• protective interlocking of the electrical circuit;</li> <li>• use of proven circuit techniques and components (see 9.4.2.2);</li> <li>• provision of partial or complete redundancy (see 9.4.2.3) or diversity (see 9.4.2.4);</li> <li>• provision for functional tests (see 9.4.2.5).</li> </ul>	It met the requirement	<b>Pass</b>
	The electrical control system(s) shall have an appropriate performance that has been determined from the risk assessment of the machine.	It met the requirement	<b>Pass</b>
	The requirements for safety-related control functions of IEC 62061 and/or ISO 13849-1, ISO 13849-2 shall apply.	It met the requirement	<b>Pass</b>
	Where functions performed by the electrical control system(s) have safety implications but application of IEC 62061 leads to a required safety integrity less than that required by SIL 1, compliance with the requirements of this part of IEC 60204 can lead to an adequate performance of the electrical control system(s).	It met the requirement	<b>Pass</b>
	Where memory retention is achieved for example, by battery power, measures shall be	It met the requirement.	<b>Pass</b>



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Clause	Requirement - test	Result	Verdict
	taken to prevent hazardous situations arising from failure or removal of the battery.		
	Means shall be provided to prevent unauthorized or inadvertent memory alteration by, for example, requiring the use of a key, access code or tool.	A key has been used.	<b>Pass</b>
9.4.2	Measures to minimize risk in the event of failure	-	-
9.4.2.1	General	-	-
	Measures to minimize risk in the event of failure include but are not limited to:	-	-
	• use of proven circuit techniques and components;	It met the requirement.	<b>Pass</b>
	• provisions of partial or complete redundancy;	It met the requirement.	<b>Pass</b>
	• provision of diversity;	It met the requirement.	<b>Pass</b>
	• provision for functional tests.	It met the requirement.	<b>Pass</b>
9.4.2.2	Use of proven circuit techniques and components	-	-
	These measures include but are not limited to:	-	-
	• bonding of control circuits to the protective bonding circuit for functional purposes (see 9.4.3.1.1 and Figure 4);	It met the requirement.	<b>Pass</b>
	• connection of control devices in accordance with 9.4.3.1.1;	It met the requirement.	<b>Pass</b>
	• stopping by de-energizing;	It met the requirement.	<b>Pass</b>
	• the switching of all control circuit conductors (for example both sides of a coil) of the device being controlled;	It met the requirement.	<b>Pass</b>
	• switching devices having direct opening action (see IEC 60947-5-1);	It met the requirement.	<b>Pass</b>
	• monitoring by: – use of mechanically linked contacts (see IEC 60947-5-1); – use of mirror contacts (see IEC 60947-4-1);	It met the requirement.	<b>Pass</b>
	• circuit design to reduce the possibility of failures causing undesirable operations.	It met the requirement.	<b>Pass</b>
9.4.2.3	Provisions of partial or complete redundancy	-	-
	By providing partial or complete redundancy, it is possible to minimize the probability that one single failure in the electrical circuit can result in a hazardous situation. Redundancy can be effective in normal operation (on-line redundancy) or designed as special circuits that take over the protective function (off-line	The redundancy for the interlocking of movable door of mould area has been constructed.	<b>Pass</b>

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Clause	Requirement - test	Result	Verdict
	redundancy) only where the operating function fails.		
	Where off-line redundancy which is not active during normal operation is provided, suitable measures shall be taken to ensure that those control circuits are available when required.	The redundancy for the interlocking of movable door of mould area has been constructed.	<b>Pass</b>
9.4.2.4	Provision of diversity	-	-
	The use of control circuits having different principles of operation, or using different types of components or devices can reduce the probability of hazards resulting from faults and/or failures. Example include:	-	-
	- the combination of normally open and normally closed contacts operated by interlocking guards;	The appropriate provision has been provided.	<b>Pass</b>
	- the use of different types of control circuit components in the circuit;	Not used in this machine.	<b>N/A</b>
	- the combination of electromechanical and electronic equipment in redundant configurations.	Not used in this machine.	<b>N/A</b>
	The combination of electrical and non-electrical systems (for example mechanical, hydraulic, pneumatic) may perform the redundant function and provide the diversity.	It met the requirement.	<b>Pass</b>
9.4.2.5	Provision for functional tests	-	-
	Functional tests may be carried out automatically by the control system, or manually by inspection or tests at start-up and at predetermined intervals, or a combination as appropriate (see also 17.2 and 18.6).	The automatic functional test after this machine is initiated has been used.	<b>Pass</b>
9.4.3	Protection against malfunction of control circuits	-	-
9.4.3.1	Insulation faults	-	-
9.4.3.1.1	General	-	-
	Measures shall be provided to reduce the probability that insulation faults on any control circuit can cause malfunction such as unintentional starting, potentially hazardous motions, or prevent stopping of the machine.	It met the requirement.	<b>Pass</b>
	The measures to meet the requirements include but are not limited to the following methods: – method a) Earthed control circuits fed by transformers; – method b) Non-earthed control circuits fed by	It met the requirement.	<b>Pass</b>

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Clause	Requirement - test	Result	Verdict
	transformers; – method c) Control circuits fed by transformer with an earthed centre-tap winding; – method d) Control circuits not fed by a transformer.		
9.4.3.1.2	Method a) – Earthed control circuits fed by transformers	-	-
	The common conductor shall be connected to the protective bonding circuit at the point of supply. All contacts, solid state elements, etc., which are intended to operate an electromagnetic or other device (for example, a relay, indicator light) are to be inserted between the switched conductor of the control circuit supply and one terminal of the coil or device. The other terminal of the coil or device is connected directly to the common conductor of the control circuit supply without any switching elements.	It met the requirement.	<b>Pass</b>
	Exception: Contacts of protective devices may be connected between the common conductor and the coils, provided that the connection is very short (for example in the same enclosure) so that an earth fault is unlikely (for example overload relays directly fitted to contactors).	No this situation.	<b>N/A</b>
9.4.3.1.3	Method b) – Non-earthed control circuits fed by transformers	-	-
	Control circuits fed from a control transformer that is not connected to the protective bonding circuit shall either:	No this situation.	<b>N/A</b>
	1) have 2-pole control switches that operate on both conductors, see Figure 8; or	No this situation.	<b>N/A</b>
	2) be provided with a device, for example an insulation monitoring device, that interrupts the circuit automatically in the event of an earth fault, see Figure 9; or	No this situation.	<b>N/A</b>
	3) where an interruption as per item 2 above would increase the risk, for example when continued operation is required during the first fault to earth, it can be sufficient to provide an insulation monitoring device (e.g. in accordance with IEC 61557-8) that will initiate	No this situation.	<b>N/A</b>

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Clause	Requirement - test	Result	Verdict
	an acoustic and optical signal at the machine, see Figure 10. Requirements for the procedure to be performed by the machine user in response to this alarm shall be described in the information for use.		
9.4.3.1.4	Method c) – Control circuits fed by transformer with an earthed centre-tap winding	-	-
	Control circuits fed from a control transformer with its centre-tap winding connected to the protective bonding circuit shall have overcurrent protective devices that break both the conductors.	No this situation.	<b>N/A</b>
	The control switches shall be 2-pole types that operate on both conductors.	No this situation.	<b>N/A</b>
9.4.3.1.5	Method d) – Control circuits not fed by a transformer	-	-
	Control circuits that are not fed by a control transformer or switch mode power supply units fitted with transformers having separate windings in accordance with IEC 61558-2-16 are only allowed for machines with a maximum of one motor starter and/or maximum of two control devices, in accordance with 9.1.1.	No this situation.	<b>N/A</b>
	Depending on the earthing of the supply system the possible cases are:	-	-
	1) directly connected to an earthed supply system (TN- or TT-system) and: a) being powered between a line conductor and the neutral conductor, see Figure 12; or b) being powered between two line conductors, see Figure 13; or	No this situation.	<b>N/A</b>
	2) directly connected to a supply system that is not earthed or is earthed through a high impedance (IT-system) and: a) being powered between a line conductor and the neutral conductor, see Figure 14; or b) being powered between two line conductors, see Figure 15.	No this situation.	<b>N/A</b>
	Method d1b) requires multi-pole control switches that switch all live conductors in order to avoid an unintentional start in case of an earth fault in the control circuit.	No this situation.	<b>N/A</b>

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Clause	Requirement - test	Result	Verdict
	Method d2) requires that a device shall be provided that interrupts the circuit automatically in the event of an earth fault.	No this situation.	N/A
9.4.3.2	Voltage interruptions	-	-
	Where the control system uses a memory device(s), proper functioning in the event of power failure shall be ensured (for example by using a non-volatile memory) to prevent any loss of memory that can result in a hazardous situation.	The power for keeping memory is only the operation parameter. The loss of parameter will not cause any hazardous situation, because the ranger for setting appropriate parameter has been constructed in the PLC, Which is not possible to be modified in any situation.	Pass
9.4.3.3	Loss of circuit continuity	-	-
	Where the loss of continuity of control circuits depending upon sliding contacts can result in a hazardous situation, appropriate measures shall be taken (for example by duplication of the sliding contacts).	For this machine, no this kind of risk is found.	N/A
10	Operator interface and machine-mounted control devices	-	-
10.1	General	-	-
10.1.1	General requirements	-	-
	Control devices for operator interface shall, as far as is practicable, be selected, mounted, and identified or coded in accordance with IEC 61310 series.	The relevant standard has been followed as far as possible.	Pass
	The possibility of inadvertent operation shall be minimized by, for example, positioning of devices, suitable design, provision of additional protective measures. Particular consideration shall be given to the selection, arrangement, programming and use of operator input devices such as touchscreens, keypads and keyboards, for the control of hazardous machine operations. See IEC 60447.	It met the requirement	Pass
	Ergonomic principles shall be taken into account in the location of operator interface devices.		
10.1.2	Location and mounting	-	-
	As far as is practicable, machine-mounted control devices shall be: – readily accessible for service and maintenance; – mounted in such a manner as to minimize the	The mounting of control device has followed the requirement of this clause.	Pass

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Clause	Requirement - test	Result	Verdict
	possibility of damage from activities such as material handling.		
	The actuators of hand-operated control devices shall be selected and installed so that: <ul style="list-style-type: none"> <li>– they are not less than 0.6 m above the servicing level and are within easy reach of the normal working position of the operator;</li> <li>– the operator is not placed in a hazardous situation when operating them.</li> </ul>	The mounting of control device has followed the requirement of this clause.	<b>Pass</b>
	The actuators of foot-operated control devices shall be selected and installed so that: <ul style="list-style-type: none"> <li>– they are within easy reach of the normal working position of the operator;</li> <li>– the operator is not placed in a hazardous situation when operating them.</li> </ul>	Not applicable.	<b>N/A</b>
10.1.3	Protection	-	-
	The degree of protection (see IEC 60529) together with other appropriate measures shall afford protection against:	-	-
	– the effects of aggressive liquids, vapours, or gases found in the physical environment or used on the machine;	The appropriate specification of component used has been provided to withstand the stress of expected use.	<b>Pass</b>
	– the ingress of contaminants (for example swarf, dust, particulate matter).	The appropriate specification of component used has been provided.	<b>Pass</b>
	In addition, the operator interface control devices shall have a minimum degree of protection against contact with live parts of IPXXD in accordance with IEC 60529.	The IP54 degree of protection has been found on the operator interface on control devices.	<b>Pass</b>
10.1.4	Position sensors	-	-
	Position sensors (for example position switches, proximity switches) shall be so arranged that they will not be damaged in the event of overtravel.	Because of the use of mechanical protection for over-travel, no damage of limit switch will occur while over-travel.	<b>Pass</b>
	Position sensors in circuits with safety-related control functions shall have direct opening action (see IEC 60947-5-1) or shall provide similar reliability (see 9.4.2).	The necessary positive opening operation for the protection device has been provided.	<b>Pass</b>
10.1.5	Portable and pendant control stations	-	-

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Clause	Requirement - test	Result	Verdict
	Portable and pendant control stations and their control devices shall be so selected and arranged as to minimize the possibility of inadvertent machine operations caused by shocks and vibrations (for example if the operator control station is dropped or strikes an obstruction) (see also 4.4.8).	No portable and pendant control station is used for this machine.	N/A
10.2	Actuators	-	-
10.2.1	Colours	-	-
	Actuators (see 3.1.1) shall be colour-coded as follows.	No this situation.	N/A
	The colours for START/ON actuators should be WHITE, GREY, BLACK or GREEN with a preference for WHITE. RED shall not be used.	No this situation.	N/A
	The colour RED shall be used for emergency stop and emergency switching off actuators (including supply disconnecting devices where it is foreseen that they are for use in an emergency). If a background exists immediately around the actuator, then this background shall be coloured YELLOW. The combination of a RED actuator with a YELLOW background shall only be used for emergency operation devices.	It is colored RED.  No YELLOW background is taken.	Pass
	The colours for STOP/OFF actuators should be BLACK, GREY, or WHITE with a preference for BLACK. GREEN shall not be used. RED is permitted, but it is recommended that RED is not used near an emergency operation device.	No this situation.	N/A
	WHITE, GREY, or BLACK are the preferred colours for actuators that alternately act as START/ON and STOP/OFF actuators. The colours RED, YELLOW, or GREEN shall not be used.	No this situation.	N/A
	WHITE, GREY, or BLACK are the preferred colours for actuators that cause operation while they are actuated and cease the operation when they are released (for example hold-to-run). The colours RED, YELLOW, or GREEN shall not be used.	No this situation.	N/A
	Reset actuators shall be BLUE, WHITE, GREY, or BLACK. Where they also act as a	No this situation.	N/A

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Clause	Requirement - test	Result	Verdict
	STOP/OFF actuator, the colours WHITE, GREY, or BLACK are preferred with the main preference being for BLACK. GREEN shall not be used.		
	The colour YELLOW is reserved for use in abnormal conditions, for example, in the event of an abnormal condition of the process, or to interrupt an automatic cycle.	No this situation.	N/A
	Where the same colour WHITE, GREY, or where the same colour WHITE, GREY, or BLACK is used for various functions (for example WHITE for START/ON and for STOP/OFF actuators) a supplementary means of coding (for example shape, position, symbol) shall be used for the identification of actuators.	No this situation.	N/A
10.2.2	Markings	-	-
	In addition to the functional identification as described in 16.3, recommended symbols to be placed near to or preferably directly on certain actuators are given in Table 2 or 3.	No this situation.	N/A
10.3	Indicator lights and displays	-	-
10.3.1	General	-	-
	Indicator lights and displays serve to give the following types of information:	-	-
	– indication: to attract the operator's attention or to indicate that a certain task should be performed. The colours RED, YELLOW, BLUE, and GREEN are normally used in this mode; for flashing indicator lights and displays, see 10.3.3.	A RED Indicator light has been taken.	Pass
	– confirmation: to confirm a command, or a condition, or to confirm the termination of a change or transition period. The colours BLUE and WHITE are normally used in this mode and GREEN may be used in some cases.	No this situation.	N/A
	Indicator lights and displays shall be selected and installed in such a manner as to be visible from the normal position of the operator (see also IEC 61310-1).	It is in compliance with this requirement.	Pass
	Circuits used for visual or audible devices used to warn persons of an impending hazardous event shall be fitted with facilities to check the	No this situation.	N/A



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	operability of these devices.		
10.3.2	Colours	-	-
	Indicator lights should be colour-coded with respect to the condition (status) of the machine in accordance with Table 4.	It is in compliance with this requirement.	<b>Pass</b>
	Indicating towers on machines should have the applicable colours in the following order from the top down; RED, YELLOW, BLUE, GREEN and WHITE.	No this situation.	<b>N/A</b>
10.3.3	Flashing lights and displays	-	-
	For further distinction or information and especially to give additional emphasis, flashing lights and displays can be provided for the following purposes:	It is in compliance with this requirement.	<b>Pass</b>
	<ul style="list-style-type: none"> <li>- to attract attention;</li> <li>- to request immediate action;</li> <li>- to indicate a discrepancy between the command and actual state;</li> <li>- to indicate a change in process (flashing during transition).</li> </ul>	It is in compliance with this requirement.	<b>Pass</b>
	It is recommended that higher frequency flashing lights or display be used for higher priority information (see IEC 60073 for recommended flashing rates and pulse/pause ratios).	It is in compliance with this requirement.	<b>Pass</b>
	Where flashing lights or displays are used to provide higher priority information, additional acoustic warnings should be considered.	It is in compliance with this requirement.	<b>Pass</b>
10.4	Illuminated push-buttons	-	-
	Illuminated push-button actuators shall be colour-coded in accordance with 10.2.1. Where there is difficulty in assigning an appropriate colour, WHITE shall be used.	No this situation.	<b>N/A</b>
	The colour of active emergency stop actuators shall remain RED regardless of the state of the illumination.		
10.5	Rotary control devices	-	-
	Devices having a rotational member, such as potentiometers and selector switches, shall have means of prevention of rotation of the stationary member. Friction alone shall not be considered sufficient.	Rotational member are so mounted that could prevent rotation of the stationary member.	<b>Pass</b>

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Clause	Requirement - test	Result	Verdict
10.6	Start devices	-	-
	Actuators used to initiate a start function or the movement of machine elements (for example slides, spindles, carriers) shall be constructed and mounted so as to minimize inadvertent operation.	Start device is so constructed and mounted that could minimize inadvertent operation.	<b>Pass</b>
10.7	Emergency stop devices	-	-
10.7.1	Location of emergency stop devices	-	-
	Devices for emergency stop shall be readily accessible	It is in compliance with this requirement.	<b>Pass</b>
	Emergency stop devices shall be provided at each location where the initiation of an emergency stop can be required.	It is in compliance with this requirement.	<b>Pass</b>
	There can be circumstances where confusion can occur between active and inactive emergency stop devices caused by, for example, unplugging or otherwise disabling an operator control station. In such cases, means (for example, design and information for use) shall be provided to minimise confusion.	It is in compliance with this requirement.	<b>Pass</b>
10.7.2	Types of emergency stop device	-	-
	The types of device for emergency stop include, but are not limited to:	-	-
	– a push-button operated switch with a palm or mushroom head type; – a pull-cord operated switch; – a pedal-operated switch without a mechanical guard.	It is in compliance with this requirement.	<b>Pass</b>
	The devices shall be in accordance with IEC 60947-5-5.	It is in compliance with this requirement.	<b>Pass</b>
10.7.3	Operation of the supply disconnecting device to effect emergency stop	-	-
	Where a stop category 0 is suitable, the supply disconnecting device may serve the function of emergency stop where: <ul style="list-style-type: none"> <li>• it is readily accessible to the operator; and</li> <li>• it is of the type described in 5.3.2 a), b), c), or d).</li> </ul>	It is in compliance with this requirement.	<b>Pass</b>
	Where intended for emergency use, the supply disconnecting device shall meet the colour requirements of 10.2.1.	It is in compliance with this requirement.	<b>Pass</b>
10.8	Emergency switching off devices	-	-

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Clause	Requirement - test	Result	Verdict
10.8.1	Location of emergency switching off devices	-	-
	Emergency switching off devices shall be located as necessary for the given application. Normally, those devices will be located separate from operator control stations. Where confusion can occur between emergency stop and emergency switching off devices, means shall be provided to minimise confusion.	Emergency switching off devices have been located as necessary for the given application.	<b>Pass</b>
10.8.2	Types of emergency switching off devices	-	-
	The type of device for emergency switching off include : – a push-button operated switch with a palm or mushroom head type of actuator; – a pull-cord operated switch.	A push-button operated switch.	<b>Pass</b>
	The devices shall have direct opening action (see Annex K of IEC 60947-5-1 and IEC 60947-5-1:2003/AMD1)	The clause has been met.	<b>Pass</b>
10.8.3	Local operation of the supply disconnecting device to effect emergency switching off	-	-
	Where the supply disconnecting device is to be locally operated for emergency switching off, it shall be readily accessible and shall meet the colour requirements of 10.2.1.	The clause has been met.	<b>Pass</b>
10.9	Enabling control device	-	-
	The enabling control function is described in 9.2.3.9.	The clause has been met.	<b>Pass</b>
	Enabling control devices shall be selected and arranged so as to minimize the possibility of defeating.	The clause has been met.	<b>Pass</b>
	Enabling control devices shall be selected that have the following features:	The clause has been met.	<b>Pass</b>
	– designed in accordance with ergonomic principles; – for a two-position type: - position 1: off-function of the switch (actuator is not operated); - position 2: enabling function (actuator is operated). – for a three-position type: - position 1: off-function of the switch (actuator is not operated);	The clause has been met.	<b>Pass</b>

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Clause	Requirement - test	Result	Verdict
	<ul style="list-style-type: none"> <li>- position 2: enabling function (actuator is operated in its mid position);</li> <li>- position 3: off-function (actuator is operated past its mid position);</li> <li>- when returning from position 3 to position 2, the enabling function is not activated.</li> </ul>		
11	Controlgear: location, mounting, and enclosures	-	-
11.1	General requirements	-	-
	All controlgear shall be located and mounted so as to facilitate:	-	-
	<ul style="list-style-type: none"> <li>– its accessibility and maintenance;</li> <li>– its protection against the external influences or conditions under which it is intended to operate;</li> <li>– operation and maintenance of the machine and its associated equipment.</li> </ul>	The clause has been met.	<b>Pass</b>
11.2	Location and mounting	-	-
11.2.1	Accessibility and maintenance	-	-
	<p>All items of controlgear shall be placed and oriented so that they can be identified without moving them or the wiring. For items that require checking for correct operation or that are liable to need replacement, those actions should be possible without dismantling other equipment or parts of the machine (except opening doors or removing covers, barriers or obstacles).</p> <p>Terminals not part of controlgear components or devices shall also conform to these requirements.</p>	The clause has been met.	<b>Pass</b>
	<p>All controlgear shall be mounted so as to facilitate its operation and maintenance from the front. Where a special tool is necessary to adjust, maintain, or remove a device, such a tool shall be supplied. Where access is required for regular maintenance or adjustment, the relevant devices shall be located between 0,4 m and 2,0 m above the servicing level. It is recommended that terminals be at least 0,2 m above the servicing level and be so placed that conductors and cables can be easily connected to them.</p>	The clause has been met.	<b>Pass</b>
	No devices except devices for operating, indicating, measuring, and cooling shall be mounted on doors or on normally removable	No this kind of device is provided for this machine.	<b>N/A</b>

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	access covers of enclosures.		
	Where control devices are connected through plug-in arrangements, their association shall be made clear by type (shape), marking or reference designation, singly or in combination (see 13.4.5).		
	Plug-in devices that are handled during normal operation shall be provided with noninterchangeable features where the lack of such a facility can result in malfunctioning.	No plug-in device is used for this machine.	<b>N/A</b>
	Plug/socket combinations that are handled during normal operation shall be located and mounted so as to provide unobstructed access.	No plug/socket combination.	<b>N/A</b>
	Test points for connection of test equipment, where provided, shall be:	-	-
	<ul style="list-style-type: none"> <li>- mounted so as to provide unobstructed access;</li> <li>- clearly identified to correspond with the documentation;</li> <li>- adequately insulated;</li> <li>- sufficiently spaced.</li> </ul>	The clause has been met.	<b>Pass</b>
11.2.2	Physical separation or grouping	-	-
	Non-electrical parts and devices not directly associated with the electrical equipment shall not be located within enclosures containing control gear.	No non-electrical part is found within the enclosure containing control gear.	<b>Pass</b>
	Devices such as solenoid valves should be separated from the other electrical equipment (for example in a separate compartment).	Solenoid valves have been separated from the other electrical equipment.	<b>Pass</b>
	Control devices mounted in the same location and connected to the power circuits, or to both power and control circuits, should be grouped separately from those connected only to the control circuits.	Appropriate separation has been made between the circuits of connected to supply voltage and the control voltage.	<b>Pass</b>
	Terminals shall be separated into groups for : <ul style="list-style-type: none"> <li>- power circuits;</li> <li>- associated control circuits</li> <li>- other control circuits, fed from external sources (for example for interlocking).</li> </ul>	Appropriate separation has been checked between the terminal of power circuit and control circuit.	<b>Pass</b>
	The groups may be mounted adjacently, provided that each group can be readily identified (for example by markings, by use of different sizes, by use of barriers or by colours).	It has been complied with.	<b>Pass</b>
	When arranging the location of devices	It has been complied with.	<b>Pass</b>

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Clause	Requirement - test	Result	Verdict
	(including interconnections), the clearances and creepage distances specified for them by the supplier shall be maintained, taking into account the external influences or conditions of the physical environment.		
11.2.3	Heating effects	-	-
	The temperature rise inside electrical equipment enclosures shall not exceed the ambient temperature specified by the component manufacturers.		
	Heat generating components (for example heat sinks, power resistors) shall be so located that the temperature of each component in the vicinity remains within the permitted limit.	It has been complied with.	<b>Pass</b>
11.3	Degrees of protection	-	-
	The protection of controlgear against ingress of solid foreign objects and of liquids shall be adequate taking into account the external influences under which the machine is intended to operate (i.e. the location and the physical environmental conditions) and shall be sufficient against dust, coolants, and swarf.	It has been complied with.	<b>Pass</b>
	Enclosures of controlgear shall provide a degree of protection of at least IP22 (see IEC 60529).	The degree of protection of control enclosure is found to be greater than IP22.	<b>Pass</b>
	Exception: an enclosure providing a minimum degree of protection IP22 is not required where: a) an electrical operating area provides an appropriate degree of protection against ingress of solids and liquids, or: b) removable collectors on conductor wire or conductor bar systems are used and the measures of 12.7.1 are applied.		
11.4	Enclosures, doors and openings	-	-
	Enclosures shall be constructed using materials capable of withstanding the mechanical, electrical and thermal stresses as well as the effects of humidity and other environmental factors that are likely to be encountered in normal service.	It has been complied with.	<b>Pass</b>
	Fasteners used to secure doors and covers should be of the captive type.	It has been complied with.	<b>Pass</b>

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Clause	Requirement - test	Result	Verdict
	Windows of enclosures shall be of a material suitable to withstand expected mechanical stress and chemical attack.	Not applicable.	N/A
	It is recommended that enclosure doors be not wider than 0,9 m and have vertical hinges, with an angle of opening of at least 95°.	It has been complied with.	Pass
	The joints or gaskets of doors, lids, covers and enclosures shall withstand the chemical effects of the aggressive liquids, vapours, or gases used on the machine. The means provided to maintain the degree of protection of an enclosure on doors, lids and covers that require opening or removal for operation or maintenance shall:	It has been complied with.	Pass
	<ul style="list-style-type: none"> <li>– be securely attached to either the door/cover or the enclosure;</li> <li>– not deteriorate due to removal or replacement of the door or the cover, and so impair the degree of protection.</li> </ul>	It has been complied with.	Pass
	Where openings in enclosures are provided (for example, for cable access), including those towards the floor or foundation or to other parts of the machine, means shall be provided to ensure the degree of protection specified for the equipment. Openings for cable entries shall be easily re-opened on site. A suitable opening may be provided in the base of enclosures within the machine so that moisture due to condensation can drain away.	It has been complied with.	Pass
	There shall be no opening between enclosures containing electrical equipment and compartments containing coolant, lubricating or hydraulic fluids, or those into which oil, other liquids, or dust can penetrate. This requirement does not apply to electrical devices specifically designed to operate in oil (for example electromagnetic clutches) nor to electrical equipment in which coolants are used.	It has been complied with.	Pass
	Where there are holes in an enclosure for mounting purposes, means may be necessary to ensure that after mounting, the holes do not impair the required protection.	No any hole, which breaks the degree of protection, is found during inspection.	N/A

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Clause	Requirement - test	Result	Verdict
	Equipment that, in normal or abnormal operation, can attain a surface temperature sufficient to cause a risk of fire or harmful effect to an enclosure material shall:	No any this kind of component is found during inspection.	N/A
	<ul style="list-style-type: none"> <li>– be located within an enclosure that will withstand, without risk of fire or harmful effect, such temperatures as can be generated; and</li> <li>– be mounted and located at a sufficient distance from adjacent equipment so as to allow safe dissipation of heat (see also 11.2.3); or</li> <li>– be otherwise screened by material that can withstand, without risk of fire or harmful effect, the heat emitted by the equipment.</li> </ul>	Not applicable.	N/A
11.5	Access to electrical equipment	-	-
	Doors in gangways and for access to electrical operating areas shall:	No this kind of gangway is used for this machine.	N/A
	<ul style="list-style-type: none"> <li>– be at least 0,7 m wide and 2,1 m high;</li> <li>– open outwards;</li> <li>– have a means (for example panic bolts) to allow opening from the inside without the use of a key or tool.</li> </ul>	No this kind of gangway is used for this machine.	N/A
12	Conductors and cables	-	-
12.1	General requirements	-	-
	Conductors and cables shall be selected so as to be suitable for the operating conditions (for example voltage, current, protection against electric shock, grouping of cables) and external influences (for example ambient temperature, presence of water or corrosive substances, mechanical stresses (including stresses during installation), fire hazards) that can exist.	Conductors and cables are selected so as to be suitable for the operating conditions and external influences.	<b>Pass</b>
	These requirements do not apply to the integral wiring of assemblies, subassemblies, and devices that are manufactured and tested in accordance with their relevant IEC standard (for example IEC 61800 series).	The clause has been met.	<b>Pass</b>
12.2	Conductors	-	-
	Conductors should be of copper. Where aluminium conductors are used, the cross-sectional area shall be at least 16 mm <sup>2</sup> .	Conductors are made of copper.	<b>Pass</b>
	To ensure adequate mechanical strength, the	No this situation.	N/A



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Clause	Requirement - test	Result	Verdict
	cross-sectional area of conductors should not be less than as shown in Table 5. However, conductors with smaller cross-sectional areas or other constructions than shown in Table 5 may be used in equipment provided adequate mechanical strength is achieved by other means and proper functioning is not impaired.		
	Class 1 and class 2 conductors are primarily intended for use between rigid, non-moving parts where vibration is not considered to be likely to cause damage.	No this situation.	<b>N/A</b>
	All conductors that are subject to frequent movement (for example one movement per hour of machine operation) should have flexible stranding of class 5 or class 6.	Class 6 conductor is used for the conductor of movable part.	<b>Pass</b>
12.3	Insulation	-	-
	Where the insulation of conductors and cables can constitute hazards due for example to the propagation of a fire or the emission of toxic or corrosive fumes, guidance from the cable supplier shall be sought. It is important to give special attention to the integrity of a circuit having a safety-related function.		
	The insulation of cables and conductors used, shall be suitable for a test voltage: – not less than 2 000 V AC for a duration of 5 min for operation at voltages higher than 50 V AC or 120 V DC, or – not less than 500 V AC for a duration of 5 min for PELV circuits (see IEC 60364-4-41, class III equipment).	2000Vac for a duration of 5 min is used for this dielectric strength test of insulation conductors.	<b>Pass</b>
	The mechanical strength and thickness of the insulation shall not be damaged in operation or during laying, especially for cables pulled into ducts.	The mechanical strength and thickness of the insulation has no damage in operation or during laying.	<b>Pass</b>
12.4	Current-carrying capacity in normal service	-	-
	The current-carrying capacity depends on several factors, for example insulation material, number of conductors in a cable, design (sheath), methods of installation, grouping and ambient temperature.	The clause has been met.	<b>Pass</b>

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Clause	Requirement - test	Result	Verdict
	One typical example of the current-carrying capacities for PVC insulated wiring between enclosures and individual items of equipment under steady-state conditions is given in Table 6.	The clause has been met.	<b>Pass</b>
12.5	Conductor and cable voltage drop	-	-
	The voltage drop from the point of supply to the load shall not exceed 5 % of the nominal voltage under normal operating conditions. In order to conform to this requirement, it can be necessary to use conductors having a larger cross-sectional area than that derived from Table 6.	The voltage drop of conductors has been tested. The test result does not exceed 1 %(about 1V for 380V test voltage).	<b>Pass</b>
	In control circuits, the voltage drop shall not reduce the voltage at any device below the manufacturer's specification for that device, taking into account inrush currents.		
	The voltage drop in components, for example overcurrent protective devices and switching devices, should be considered.		
12.6	Flexible cables	-	-
12.6.1	General	-	-
	Flexible cables shall have class 5 or class 6 conductors	The class 6 flexible cable is provided for this equipment.	<b>Pass</b>
	Cables that are subjected to severe duties shall be of adequate construction to protect against: <ul style="list-style-type: none"> <li>- abrasion due to mechanical handling and dragging across rough surfaces;</li> <li>- kinking due to operation without guides;</li> <li>- stress resulting from guide rollers and forced guiding, being wound and re-wound on cable drums.</li> </ul>	No this situation.	<b>N/A</b>
12.6.2	Mechanical rating	-	-
	The cable handling system of the machine shall be so designed to keep the tensile stress of the conductors as low as is practicable during machine operations. Where copper conductors are used, the tensile stress applied to the conductors shall not exceed 15 N/mm <sup>2</sup> of the copper cross-sectional area. Where the demands of the application exceed the tensile stress limit of 15 N/mm <sup>2</sup> , cables with special construction features should be used and the	The class 6 flexible cable is provided for this equipment.	<b>Pass</b>

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Clause	Requirement - test	Result	Verdict
	allowed maximal tensile stress should be agreed with the cable manufacturer.		
	The maximum stress applied to the conductors of flexible cables with material other than copper shall be within the cable manufacturer's specification.	No this situation.	N/A
12.6.3	Current-carry capacity of cables wound on drums	-	-
	Cables to be wound on drums shall be selected with conductors having a cross-sectional area such that, when fully wound on the drum and carrying the normal service load, the max. allowable conductor temperature is not exceeded	No this situation.	N/A
	For cables of circular cross-sectional area installed on drums, the maximum current-carrying capacity in free air should be derated in accordance with Table 7	No this situation.	N/A
12.7	Collector wires, collector bars and slip-ring assemblies	-	-
12.7.1	Basic protection	-	-
	Conductor wires, conductor bars and slip-ring assemblies shall be installed or enclosed in such a way that, during normal access to the machine, protection against direct contact is achieved by the application of one of the following protective measures:	Every wires are protected with the control enclosure of IP2X	<b>Pass</b>
	– protection by partial insulation of live parts, or where this is not practicable; – protection by enclosures or barriers of at least IP2X or IPXXB.	The degree of protection for the horizontal top surface of control enclosure is IP54.	<b>Pass</b>
	Horizontal top surfaces of barriers or enclosures that are readily accessible shall provide a degree of protection of at least IP4X or IPXXD.	No this situation.	N/A
	Where the required degree of protection is not achieved, protection by placing live parts out of reach in combination with emergency switching off in accordance with 9.2.3.4.3 shall be applied.	No this situation.	N/A
	Conductor wires and conductor bars shall be so placed and/or protected as to: – prevent contact, especially for unprotected conductor wires and conductor bars, with conductive items such as the cords of pull-cord	The appropriate provision for preventing contact and damage from a swinging load has been found during inspection.	<b>Pass</b>

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Clause	Requirement - test	Result	Verdict
	switches, strain-relief devices and drive chains; – prevent damage from a swinging load.		
12.7.2	Protective conductors	-	-
	Where conductor wires, conductor bars and slip-ring assemblies are installed as part of the protective bonding circuit, they shall not carry current in normal operation. Therefore, the protective conductor (PE) and the neutral conductor (N) shall each use a separate conductor wire, conductor bar or slip-ring.	No this situation.	N/A
	The continuity of protective conductors using sliding contacts shall be ensured by taking appropriate measures (for example, duplication of the current collector, continuity monitoring).		
12.7.3	Protective conductor current collectors	-	-
	Protective conductor current collectors shall have a shape or construction so that they are not interchangeable with the other current collectors. Such current collectors shall be of the sliding contact type.	No this situation.	N/A
12.7.4	Removable current collectors with a disconnecter function	-	-
	Removable current collectors having a disconnecter function shall be so designed that the protective conductor circuit is interrupted only after the live conductors have been disconnected, and the continuity of the protective conductor circuit is re-established before any live conductor is reconnected	No this kind of current collector is used for this machine.	N/A
12.7.5	Clearance in air	-	-
	Clearances between the respective conductors, and between adjacent systems, of conductor wires, conductor bars, slip-ring assemblies and their current collectors shall be suitable for at least a rated impulse voltage of an overvoltage category III in accordance with IEC 60664-1.	No this situation.	N/A
12.7.6	Creepage distances	-	-
	Creepage distances between the respective conductors, between adjacent systems of conductor wires, conductor bars and slip-ring assemblies, and their current collectors shall be	No this situation.	N/A

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Clause	Requirement - test	Result	Verdict
	suitable for operation in the intended environment, for example open air (IEC 60664-1), inside buildings, protected by enclosures.		
	In abnormally dusty, moist or corrosive environments, the following creepage distance requirements apply: – unprotected conductor wires, conductor bars, and slip-ring assemblies shall be equipped with insulators with a minimum creepage distance of 60 mm; – enclosed conductor wires, insulated multipole conductor bars and insulated individual conductor bars shall have a minimum creepage distance of 30 mm.	No this situation.	N/A
	The manufacturer's recommendations shall be followed regarding special measures to prevent a gradual reduction in the insulation values due to unfavourable ambient conditions (for example deposits of conductive dust, chemical attack).	No this situation.	N/A
12.7.7	Conductor system sectioning	-	-
	Where conductor wires or conductor bars are arranged so that they can be divided into isolated sections, suitable design measures shall be employed to prevent the energization of adjacent sections by the current collectors themselves.	No this situation.	N/A
12.7.8	Construction and installation of collector wire, collector bar systems and slip-ring assemblies	-	-
	Conductor wires, conductor bars and slip-ring assemblies in power circuits shall be grouped separately from those in control circuits.	No this situation.	N/A
	Conductor wires, conductor bars and slip-ring assemblies shall be capable of withstanding, without damage, the mechanical forces and thermal effects of short-circuit currents.	No this situation.	N/A
	Removable covers for conductor wire and conductor bar systems laid underground or underfloor shall be so designed that they cannot be opened by one person without the aid of a tool.	No this situation.	N/A
	Where conductor bars are installed in a common metal enclosure, the individual sections of the enclosure shall be bonded together and connected	No this situation.	N/A

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Clause	Requirement - test	Result	Verdict
	to a protective bonding conductor at several points depending upon their length. Metal covers of conductor bars laid underground or underfloor shall also be bonded together and connected to a protective bonding conductor.		
	The protective bonding circuit shall include the covers or cover plates of metal enclosures or underfloor ducts. Where metal hinges form a part of the bonding circuit, their continuity shall be verified.	No this situation.	<b>N/A</b>
	Underground and underfloor collector bar ducts shall have drainage facilities	No this situation.	<b>N/A</b>
13	Wiring practices	-	-
13.1	Connections and routing	-	-
13.1.1	General requirements	-	-
	All connections, especially those of the protective bonding circuit, shall be secured against accidental loosening.	All connections are secured against accidental loosening.	<b>Pass</b>
	The means of connection shall be suitable for the cross-sectional areas and neutral of the conductors being terminated	It is in compliance with this situation.	<b>Pass</b>
	The connection of two or more conductors to one terminal is permitted only in those cases where the terminal is designed for that purpose.	No this kind of connection.	<b>N/A</b>
	One protective bonding circuit conductor shall be connected to one terminal connecting point	One protective bonding circuit conductor is connected to one terminal connecting point.	<b>Pass</b>
	Soldered connections shall only be permitted if terminals are suitable for soldering	No soldered connection is used for provided.	<b>N/A</b>
	Terminals on terminal blocks shall be plainly identified to correspond with markings on the diagrams	Appropriate identification has been provided.	<b>Pass</b>
	Where an incorrect electrical connection (for example, arising from replacement of devices) is identified as a source of risk that needs to be reduced and it is not practicable to reduce the possibility of incorrect connection by design measures, the conductors and/or terminations shall be identified.	No this kind of risk.	<b>N/A</b>
	The installation of flexible conduits and cables shall be such that liquids shall drain away from	The appropriate provision of drain has been provided for the installation of	<b>Pass</b>

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Clause	Requirement - test	Result	Verdict
	the fittings	flexible conduits.	
	Means of retaining conductor strands shall be provided when terminating conductors at devices or terminals that are not equipped with this facility. Solder shall not be used for that purpose.	Appropriate retaining provisions for the conductor strands have been provided.	<b>Pass</b>
	Shielded conductors shall be so terminated as to prevent fraying of strands and to permit easy disconnection	Appropriate termination has been found for the shield conductors.	<b>Pass</b>
	Identification tags shall be legible, permanent, and appropriate for the physical environment	Appropriate identification has been found for the conductors and terminals.	<b>Pass</b>
	Terminal blocks shall be so mounted and wired, that the internal and external wiring does not cross over the terminals.	No any external and/or internal wiring was found to cross over the terminals.	<b>Pass</b>
13.1.2	Conductor and cable runs	-	-
	Conductors and cables shall be run from terminal to terminal without splices or joints. Connections using plug/socket combinations with suitable protection against accidental disconnection are not considered to be splices or joints for the purpose of 13.1.2.	Conductors have been found to run from terminal to terminal.	<b>Pass</b>
	Exception: Where it is impracticable to provide terminals in a junction box (for example on mobile machines, on machines having long flexible cables; cable connections exceeding a length which is not practical to be supplied by the cable manufacturer on one cable drum), splices or joints may be used.		
	Where it is necessary to connect and disconnect cables and cable assemblies, a sufficient extra length shall be provided for that purpose.	Not necessary to disconnect the cable assemblies.	<b>N/A</b>
	The terminations of cables shall be adequately supported to prevent mechanical stresses at the terminations of the conductors	Appropriate support for the terminal of cable was found.	<b>Pass</b>
	Wherever practicable, the protective conductor shall be placed close to the associated live conductors in order to decrease the impedance of the loop.	No this situation.	<b>Pass</b>
13.1.3	Conductors of different circuits	-	-
	Conductors of different circuits may be laid side by side, may occupy the same duct (for example	Appropriate arrangement for the connection of different circuit has been	<b>Pass</b>

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Clause	Requirement - test	Result	Verdict
	conduit, cable trunking system), or may be in the same multiconductor cable or in the same plug/socket combination provided that the arrangement does not impair the proper functioning of the respective circuits and: <ul style="list-style-type: none"> <li>• where those circuits operate at different voltages, the conductors are separated by suitable barriers or;</li> <li>• the conductors are insulated for the highest voltage to which any of the conductors can be subjected, for example line to line voltage for unearthed systems and phase to earth voltage for earthed systems.</li> </ul>	found.	
13.1.4	AC circuits – Electromagnetic effects (prevention of eddy currents)	-	-
	Conductors of AC circuits installed in ferromagnetic enclosures shall be arranged so that all conductors of each circuit, including the protective conductor of each circuit, are contained in the same enclosure. Where such conductors enter a ferrous enclosure, they shall be arranged such that the conductors are not individually surrounded by ferromagnetic material.	It met the requirement.	<b>Pass</b>
	Single-core cables armoured with steel wire or steel tape should not be used for AC circuits.	It met the requirement.	<b>Pass</b>
13.1.5	Connection between pick-up and pick-up converter of an inductive power supply system	-	-
	The cable between the pick-up and the pick-up converter shall be:	No this situation.	<b>Pass</b>
	– as short as practicable;	No this situation.	<b>Pass</b>
	– adequately protected against mechanical damage.	No this situation.	<b>Pass</b>
13.2	Identification of conductors	-	-
13.2.1	General requirements	-	-
	Each conductor shall be identifiable at each termination in accordance with the technical documentation.	It is identified in accordance with the technical documentation.	<b>Pass</b>
	It is recommended (for example to facilitate	Colour and numbers is used for it.	<b>Pass</b>



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Clause	Requirement - test	Result	Verdict
	maintenance) that conductors be identified by number, alphanumeric, colour (either solid or with one or more stripes), or a combination of colour and numbers or alphanumeric. When numbers are used, they shall be Arabic; letters shall be Roman (either upper or lower case).		
13.2.2	Identification of the protective conductor / protective bonding conductor	-	-
	The protective conductor / protective bonding conductor shall be readily distinguishable from other conductors by shape, location, marking, or colour.	It is identified by marking and colour.	<b>Pass</b>
	When identification is by colour alone, the bicolour combination GREEN-AND-YELLOW shall be used throughout the length of the conductor. This colour identification is strictly reserved for the protective conductor.	It is in compliance with this requirement.	<b>Pass</b>
	For insulated conductors, the bicolour combination GREEN-AND-YELLOW shall be such that on any 15 mm length, one of the colours covers at least 30% and not more than 70% of the surface of the conductor, the other colour covering the remainder of the surface.	It is in compliance with this requirement.	<b>Pass</b>
	Where the protective conductor can be easily identified by its shape, position, or construction (for example a braided conductor, uninsulated stranded conductor), or where the insulated conductor is not readily accessible, colour coding throughout its length is not necessary but the ends or accessible locations shall be clearly identified by the graphical symbol IEC 60417-5019 or by the bicolour combination GREEN-AND-YELLOW.	It is in compliance with this requirement.	<b>Pass</b>
13.2.3	Identification of the neutral conductor	--	-
	Where a circuit includes a neutral conductor that is identified by colour alone, the colour used for this conductor shall be BLUE. In order to avoid	The color used for neutral conductor is light blue.	<b>Pass</b>

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	confusion with other colours, it is recommended that an unsaturated blue be used, called here “light blue” (see 3.2.2 of IEC 60446). Where the selected colour is the sole identification of the neutral conductor, that colour shall not be used for identifying any other conductor where confusion is possible.		
	Where identification by colour is used, bare conductors used as neutral conductors shall be either coloured by a stripe, 15 mm to 100 mm wide in each compartment or unit and at each accessible location, or coloured throughout their length.	No this situation.	<b>N/A</b>
13.2.4	Identification by colour	-	-
	Where colour-coding is used for identification of conductors (other than the protective conductor (see 13.2.2) and the neutral conductor (see 13.2.3)), the following colours may be used: BLACK, BROWN, RED, ORANGE, YELLOW, GREEN, BLUE (including LIGHT BLUE), VIOLET, GREY, WHITE, PINK, TURQUOISE.	It is in compliance with this requirement.	<b>Pass</b>
	It is recommended that, where colour is used for identification, the colour be used throughout the length of the conductor either by the colour of the insulation or by colour markers at regular intervals and at the ends or accessible location.	It is in compliance with this requirement.	<b>Pass</b>
	For safety reasons, the colour GREEN or the colour YELLOW should not be used where there is a possibility of confusion with the bicolour combination GREEN-AND-YELLOW (see 13.2.2).	It is in compliance with this requirement.	<b>Pass</b>
	Colour identification using combinations of those colours listed above may be used provided there can be no confusion and that GREEN or YELLOW is not used except in the bicolour combination GREEN-AND-YELLOW.	It is in compliance with this requirement.	<b>Pass</b>
	Where colour-coding is used for identification of conductors, it is recommended that they be colour-coded as follows: – BLACK: a.c. and d.c. power circuits;	Not applicable.	<b>N/A</b>

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Clause	Requirement - test	Result	Verdict
	<ul style="list-style-type: none"> <li>- RED: a.c. control circuits;</li> <li>- BLUE: d.c. control circuits;</li> <li>- ORANGE: excepted circuits in accordance with 5.3.5.</li> </ul>		
	Exceptions to the above are permitted where insulation is not available in the colours recommended (for example in multiconductor cables).	It is in compliance with this requirement.	<b>Pass</b>
13.3	Wiring inside enclosures	-	-
	Conductors inside enclosures shall be supported where necessary to keep them in place.	It is in compliance with this requirement.	<b>Pass</b>
	Non-metallic ducts shall be permitted only when they are made with a flame-retardant insulating material (see the IEC 60332 series).	It is in compliance with this requirement.	<b>Pass</b>
	It is recommended that electrical equipment mounted inside enclosures be designed and constructed in such a way as to permit modification of the wiring from the front of the enclosure (see also 11.2.1). Where that is not practicable and control devices are connected from the rear of the enclosure, access doors or swingout panels shall be provided.	It is in compliance with this requirement.	<b>Pass</b>
	Connections to devices mounted on doors or to other movable parts shall be made using flexible conductors in accordance with 12.2 and 12.6 to allow for the frequent movement of the part.	It is in compliance with this requirement.	<b>Pass</b>
	The conductors shall be anchored to the fixed part and to the movable part independently of the electrical connection (see also 8.2.3 and 11.2.1).	It is in compliance with this requirement.	<b>Pass</b>
	Conductors and cables that do not run in ducts shall be adequately supported.	It is in compliance with this requirement.	<b>Pass</b>
	Terminal blocks or plug/socket combinations shall be used for control wiring that extends beyond the enclosure. For plug/socket combinations, see also 13.4.5 and 13.4.6.	No this situation.	<b>N/A</b>
	Power cables and cables of measuring circuits may be directly connected to the terminals of the devices for which the connections were intended.	It is in compliance with this requirement.	<b>Pass</b>
13.4	Wiring outside enclosures	-	-
13.4.1	General requirements	-	-
	The means of introduction of cables or ducts with	No this situation.	<b>N/A</b>

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Clause	Requirement - test	Result	Verdict
	their individual glands, bushings, etc., into an enclosure shall ensure that the degree of protection is not reduced (see 11.3)		
	Conductors of a circuit shall not be distributed over different multi-core cables, conduits, cable ducting systems or cable trunking systems. This is not required where a number of multi-core cables, forming one circuit, are installed in parallel. Where multi-core cables are installed in parallel, each cable shall contain one conductor of each phase and the neutral if any.	No this situation.	<b>N/A</b>
13.4.2	External ducts	-	-
	Conductors and their connections external to the electrical equipment enclosure(s) shall be enclosed in suitable ducts (i.e. conduit or cable trunking systems) as described in 13.5 except for suitably protected cables that may be installed without ducts and with or without the use of open cable trays or cable support means. Where devices such as position switches or proximity switches are supplied with a dedicated cable, their cable need not be enclosed in a duct when the cable is suitable for the purpose, sufficiently short, and so located or protected, that the risk of damage is minimized.	It is in compliance with this requirement.	<b>Pass</b>
	Fittings used with ducts or multiconductor cable shall be suitable for the physical environment.	It is in compliance with this requirement.	<b>Pass</b>
	Flexible conduit or flexible multiconductor cable shall be used where it is necessary to employ flexible connections to pendant push-button stations.	It is in compliance with this requirement.	<b>Pass</b>
	The weight of the pendant stations shall be supported by means other than the flexible conduit or the flexible multiconductor cable, except where the conduit or cable is specifically designed for that purpose.	It is in compliance with this requirement.	<b>Pass</b>
13.4.3	Connection to moving elements of the machine	-	-
	The design of connections to moving parts shall take into account the foreseeable frequency of movement and shall be made using conductors in accordance with 12.2 and 12.6.	The appropriate conductor has been chosen according to the requirement of 12.2 and 12.6.	<b>Pass</b>

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Clause	Requirement - test	Result	Verdict
	Flexible cable and flexible conduit shall be so installed as to avoid excess flexing and straining, particularity at the fittings	Flexible cable and flexible conduit have been so installed as to avoid excess flexing and straining, particularity at the fittings.	<b>Pass</b>
	Cables subject to movement shall be supported in such a way that there is no mechanical strain on the connection points nor any sharp flexing	Appropriate support for this purpose has been found on the machine.	<b>Pass</b>
	When this is achieved by the provision of a loop, it shall have sufficient length to provide for a bending radius of the cable of at least 10 times the diameter of the cable.	No loop is used.	<b>N/A</b>
	Flexible cables of machines shall be so installed or protected to minimize the possibility of external damage due to factors that include the following cable use or potential abuse: – being run over by the machine itself; – being run over by vehicles or other machines; – coming into contact with the machine structure during movements; – running in and out of cable baskets, or on or off cable drums; – acceleration forces and wind forces on festoon systems or suspended cables; – excessive rubbing by cable collector; – exposure to excessive radiated heat.	Appropriate protection has been provided.	<b>Pass</b>
	The cable sheath shall be resistant to the normal wear that can be expected from movement and to the effects of environmental contaminants (for example oil, water, coolants, dust).	The cable sheath can be resistant to the normal wear.	<b>Pass</b>
	Where cables subject to movement are close to moving parts, precautions shall be taken to maintain a space of at least 25 mm between the moving parts and the cables. Where that distance is not practicable, fixed barriers shall be provided between the cables and the moving parts.	It is in compliance with this requirement.	<b>Pass</b>
	The cable handing system shall be so designed that the lateral cable angles do not exceed 5°, avoiding torsion in the cable when: – being wound on and off cable drums; and – approaching and leaving cable guidance devices.	It is in compliance with this requirement.	<b>Pass</b>

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Clause	Requirement - test	Result	Verdict
	Measures shall be taken to ensure that at least two turns of flexible cables always remain on a drum.	It is in compliance with this requirement.	<b>Pass</b>
	Devices serving to guide and carry a flexible cable shall be so designed that the inner bending radius at all points where the cable is bent is not less than the values given in Table 8, unless otherwise agreed with the cable manufacturer, taking into account the permissible tension and the expected fatigue life.	It is in compliance with this requirement.	<b>Pass</b>
	The straight section between two bends shall be at least 20 times the diameter of the cable.	It is in compliance with this requirement.	<b>Pass</b>
	Where flexible conduit is adjacent to moving parts, the construction and supporting means shall prevent damage to the flexible conduit under all conditions of operation.	It is in compliance with this requirement.	<b>Pass</b>
	Flexible conduit shall not be used for connections subject to rapid or frequent movements except when specifically designed for that purpose.	It is in compliance with this requirement.	<b>Pass</b>
13.4.4	Interconnection of devices on the machine	-	-
	Where several machine-mounted switching devices (for example position sensors, push-buttons) are connected in series or in parallel, it is recommended that the connections between those devices be made through terminals forming intermediate test points..	No this situation.	<b>N/A</b>
	Such terminals shall be conveniently placed, adequately protected, and shown on the relevant diagrams	No this situation.	<b>N/A</b>
13.4.5	Plug/socket combinations	-	-
	Components or devices inside an enclosure, terminated by fixed plug/socket combinations (no flexible cable), or components connected to a bus system by a plug/socket combination, are not considered to be plug/socket combinations for the purpose of this 13.4.5.	No plug/socket is used for this machine.	<b>N/A</b>
	After installation in accordance with item a) below, plug/socket combinations shall be of such a type as to prevent unintentional contact with live parts at any time, including during insertion or removal of the connectors. The degree of protection shall be at least IP2X or IPXXB.	No plug/socket is used for this machine.	<b>N/A</b>

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Clause	Requirement - test	Result	Verdict
	PELV circuits are excepted from this requirement.		
	Where the plug/socket contains a contact for the protective bonding circuit, it shall have a first make last break contact (see also 8.2.4).	No plug/socket is used for this machine.	N/A
	Plug/socket combinations intended to be connected or disconnected during load conditions shall have sufficient load-breaking capacity. Where the plug/socket combination is rated at 30 A, or greater, it shall be interlocked with a switching device so that the connection and disconnection is possible only when the switching device is in the OFF position.	No plug/socket is used for this machine.	N/A
	Plug/socket combinations that are rated at more than 16 A shall have a retaining means to prevent unintended or accidental disconnection.	No plug/socket is used for this machine.	N/A
	Where an unintended or accidental disconnection of plug/socket combinations can cause a hazardous situation, they shall have a retaining means.	No plug/socket is used for this machine.	N/A
	The installation of plug/socket combinations shall fulfil the following requirements as applicable:	-	-
	a) The component which remains live after disconnection shall have a degree of protection of at least IP2X or IPXXB, taking into account the required clearance and creepage distances. PELV circuits are excepted from this requirement.	No plug/socket is used for this machine.	N/A
	b) Metallic housings of plug/socket combinations shall be connected to the protective bonding circuit.	No plug/socket is used for this machine.	N/A
	c) Plug/socket combinations intended to carry power loads but not to be disconnected during load conditions shall have a retaining means to prevent unintended or accidental disconnection and shall be clearly marked that they are not intended to be disconnected under load.	No plug/socket is used for this machine.	N/A
	d) Where more than one plug/socket combination is provided in the same electrical equipment, the associated combinations shall be clearly identifiable. It is recommended that mechanical coding be used to prevent incorrect insertion.	No plug/socket is used for this machine.	N/A

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Clause	Requirement - test	Result	Verdict
	e) Plug/socket combinations used in control circuits shall fulfil the applicable requirements of IEC 61984.	No plug/socket is used for this machine.	N/A
	Exception: In plug/socket combinations in accordance with IEC 60309-1, only those contacts shall be used for control circuits which are intended for those purposes. This exception does not apply to control circuits using high frequency signals superimposed on the power circuits.	No plug/socket is used for this machine.	N/A
13.4.6	Dismantling for shipment	-	-
	Where it is necessary that wiring be disconnected for shipment, terminals or plug/socket combinations shall be provided at the sectional points. Such terminals shall be suitably enclosed and plug/socket combinations shall be protected from the physical environment during transportation and storage.	No this situation.	N/A
13.4.7	Additional conductors	-	-
	Consideration should be given to providing additional conductors for maintenance or repair. When spare conductors are provided, they shall be connected to spare terminals or isolated in such a manner as to prevent contact with live parts.	It is in compliance with this requirement.	Pass
13.5	Ducts, connection boxes and other boxes	-	-
13.5.1	General requirements	-	-
	Ducts shall provide a degree of protection (see IEC 60529) suitable for the application.	It is in compliance with this requirement.	Pass
	All sharp edges, flash, burrs, rough surfaces, or threads with which the insulation of the conductors can come in contact shall be removed from ducts and fittings. Where necessary, additional protection consisting of a flame-retardant, oil-resistant insulating material shall be provided to protect conductor insulation.	It is in compliance with this requirement.	Pass
	Drain holes of 6 mm diameter are permitted in cable trunking systems, connection boxes, and other boxes used for wiring purposes that can be subject to accumulations of oil or moisture.	It is in compliance with this requirement.	Pass
	In order to prevent confusion of conduits with oil,	It is in compliance with this requirement.	Pass



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Clause	Requirement - test	Result	Verdict
	air, or water piping, it is recommended that the conduits be either physically separated or suitably identified.		
	Ducts and cable trays shall be rigidly supported and positioned at a sufficient distance from moving parts and in such a manner so as to minimize the possibility of damage or wear. In areas where human passage is required, the ducts and cable trays shall be mounted at least 2 m above the working surface.	It is in compliance with this requirement.	<b>Pass</b>
	Cable trays that are partially covered should not be considered to be ducts or cable trunking systems (see 13.5.6), and the cables used shall be of a type suitable for installation on open cable trays.	No this situation.	<b>N/A</b>
	It is recommended that the dimensions and arrangement of ducts be such as to facilitate the insertion of the conductors and cables.		
13.5.2	<b>Rigid metal conduit and fittings</b>	-	-
	Rigid metal conduit and fittings shall be of galvanized steel or of a corrosion-resistant material suitable for the conditions. Where galvanic action is possible between dissimilar metals metal these combinations shall not be used.	No this situation.	<b>N/A</b>
	Conduits shall be securely held in place and supported at each end.	No this situation.	<b>N/A</b>
	Fittings shall be compatible with the conduit and appropriate for the application. Fittings shall be threaded unless structural difficulties prevent assembly.	No this situation.	<b>N/A</b>
	Where threadless fittings are used, the conduit shall be securely fastened to the equipment	No this situation.	<b>N/A</b>
	Conduit bends shall be made in such a manner that the conduit shall not be damaged and the internal diameter of the conduit shall not be effectively reduced.	No this situation.	<b>N/A</b>
13.5.3	<b>Flexible metal conduit and fittings</b>	-	-
	A flexible metal conduit shall consist of a flexible metal tubing or woven wire armour. It shall be suitable for the expected physical environment.	No this situation.	<b>N/A</b>

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Clause	Requirement - test	Result	Verdict
	Fittings shall be compatible with the conduit and appropriate for the application.	No this situation.	N/A
13.5.4	Flexible non-metallic conduit and fittings		
	Flexible non-metallic conduit shall be resistant to kinking and shall have physical characteristics similar to those of the sheath of multiconductor cables.	It is in compliance with this requirement.	Pass
	The conduit shall be suitable for use in the expected physical environment.	It is in compliance with this requirement.	Pass
	Fittings shall be compatible with the conduit and appropriate for the application.	It is in compliance with this requirement.	Pass
13.5.5	Cable trunking systems	-	-
	Cable trunking systems external to enclosures shall be rigidly supported and clear of all moving parts of the machine and of sources of contamination.	It is in compliance with this requirement.	Pass
	Covers shall be shaped to overlap the sides; gaskets shall be permitted.	Not applicable	N/A
	Covers shall be attached to cable trunking systems by suitable means.	Not applicable	N/A
	On horizontal cable trunking systems, the cover shall not be on the bottom unless specifically designed for such installation.	Not applicable	N/A
	Where the cable trunking system is furnished in sections, the joints between sections shall fit tightly but need not be gasketed.	It is in compliance with this requirement.	Pass
	The only openings permitted shall be those required for wiring or for drainage.	It is in compliance with this requirement.	Pass
	Cable trunking systems shall not have opened but unused knockouts.	It is in compliance with this requirement.	Pass
13.5.6	Machine compartments and cable trunking systems	-	-
	The use of compartments or cable trunking systems within the column or base of a machine to enclose conductors is permitted provided the compartments or cable trunking systems are isolated from coolant or oil reservoirs and are entirely enclosed.	No additional coolant and/or oil reservoirs make it necessary to provide additional isolation.	N/A
	Conductors run in enclosed compartment and cable trunking systems shall be so secured and arranged that they are not subject to damage.	Conductors run in enclosed compartment have been so secured and arranged that they be not subject to damage.	Pass

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Clause	Requirement - test	Result	Verdict
13.5.7	Connection boxes and other boxes	-	-
	Connection boxes and other boxes used for wiring purposes shall be accessible for maintenance.	It is in compliance with this requirement.	<b>Pass</b>
	Shall provide protection against the ingress of solid bodies and liquids, taking into account the external influences under which the machine is intended to operate (see 11.3).	It is in compliance with this requirement.	<b>Pass</b>
	Shall not have opened but unused knockouts nor any other opening and shall be so constructed as to exclude materials such as dust, flyings, oil, and coolant.	It is in compliance with this requirement.	<b>Pass</b>
13.5.8	Motor connection boxes	-	-
	Motor connection boxes shall enclose only connections to the motor and motor-mounted devices (for example brakes, temperature sensors, plugging switches, tachometer generators).	Not applicable	<b>N/A</b>
14	Electric motors and associated equipment	-	-
14.1	General requirements	-	-
	Electric motor should conform to the requirements of IEC 60034 series	Electric motors conform to the requirement of IEC60034 series.	<b>Pass</b>
	The protection requirements for motors and associated equipment are given in 7.2 for overcurrent protection, in 7.3 for protection of motors against overheating, and in 7.6 for overspeed protection.	It is in compliance with this requirement.	<b>Pass</b>
	As many controllers do not switch off the supply to a motor when it is at rest, care shall be taken to ensure compliance with the requirements of 5.3, 5.4, 5.5, 7.5, 7.6 and 9.4. Motor control equipment shall be located and mounted in accordance with Clause 11.	It is in compliance with this requirement.	<b>Pass</b>
14.2	Motor enclosures	-	-
	Enclosures for motors should be in accordance with IEC 60034-5.	It is in compliance with this requirement.	<b>Pass</b>
	The degree of protection shall be dependent on the application and the physical environment (see 4.4). All motors shall be adequately protected from mechanical damage.		<b>Pass</b>
14.3	Motor dimensions	-	-
	As far as is practicable, the dimensions of the	The dimensions of the motors have been	<b>Pass</b>

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Clause	Requirement - test	Result	Verdict
	motors shall conform to those given in the IEC 60072 series.	compliance with IEC 60072 series.	
14.4	Motor mounting and compartments	-	-
	Each motor and its associated couplings, belts and pulleys, or chains, shall be so mounted that they are adequately protected and are easily for inspection maintenance, adjustment and alignment, lubrication, and replacement.	Appropriate mounting has been found that they are adequately protected and are easily for inspection.	<b>Pass</b>
	The motor mounting arrangement shall be such that all motor mounting means can be removed and all terminal boxes are accessible.	Motor hold-down means can be removed and all terminal boxes are accessible.	<b>Pass</b>
	Motors shall be so mounted that proper cooling is ensured and the temperature rise remains within the limits of the insulation class (see IEC 60034-1).	The proper cooling has been ensured and the temperature rise remains within the limits of the insulation class.	<b>Pass</b>
	Where practicable, motor compartments should be clean and dry, and when required, shall be ventilated directly to the exterior of the machine.	All motor compartments are clean and dry, and are ventilated directly to the exterior of the machine.	<b>Pass</b>
	The vents shall be such that ingress of swarf, dust, or water spray is at an acceptable level.	The vents have been such that ingress of swarf, dust, or water spray is at an acceptable level.	<b>Pass</b>
	There shall be no opening between the motor compartment and any other compartment that does not meet the motor compartment requirements.	There is no opening between the motor compartment and any other compartment that does not meet the motor compartment requirements.	<b>Pass</b>
	Where a conduit or pipe is run into the motor compartment from another compartment not meeting the motor compartment requirements, any clearance around the conduit or pipe shall be sealed.	No any conduit or pipe run into the motor compartment from another compartment not meet the motor compartment requirements.	<b>Pass</b>
14.5	Criteria for motor selection	-	-
	The characteristics of motors and associated equipment shall be selected in accordance with the anticipated service and physical environmental conditions (see 4.4).	It is compliance with this requirement.	<b>Pass</b>
	In this respect, the points that shall be considered include:	-	-
	- type of motor;	It has been considered.	<b>Pass</b>
	- type of duty cycle (see IEC 60034-1);	It has been considered.	<b>Pass</b>
	- fixed speed or variable speed operation, (and the consequent variable influence of the ventilation);	It has been considered.	<b>Pass</b>

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Clause	Requirement - test	Result	Verdict
	- mechanical vibration;	It has been considered.	<b>Pass</b>
	- type of motor control;	It has been considered.	<b>Pass</b>
	- temperature rise and other effects of the frequency spectrum of the voltage and/or current feeding the motor (particularly when it is supplied from a converter);	It has been considered.	<b>Pass</b>
	- method of starting and the possible influence of the inrush current on the operation of other users of the same power supply, taking also into account possible special considerations stipulated by the supply authority;	It has been considered.	<b>Pass</b>
	- variation of counter-torque load with time and speed;	It has been considered.	<b>Pass</b>
	- influence of loads with large inertia;	It has been considered.	<b>Pass</b>
	- influence of constant torque or constant power operation;	It has been considered.	<b>Pass</b>
	- possible need of inductive reactors between motor and converter.	It has been considered.	<b>Pass</b>
14.6	Protective devices for mechanical brakes	-	-
	Operation of the overload and overcurrent protective devices for mechanical brake actuators shall initiate the simultaneous de-energization (release) of the associated machine actuators.	Appropriate motor has been used for this machine.	<b>Pass</b>
15	Socket-outlets and lighting	-	-
15.1	Socket-outlets for accessories	-	-
	Where the machine or its associated equipment is provided with socket-outlets that are intended to be used for accessory equipment (for example hand-held power tools, test equipment), the following apply:	No socket-outlets are used for this machine.	<b>N/A</b>
	– the socket-outlets should conform to IEC 60309-1. Where that is not practicable, they should be clearly marked with the voltage and current ratings;	No socket-outlets are used for this machine.	<b>N/A</b>
	– the continuity of the protective bonding circuit to the socket-outlet shall be ensured;	No socket-outlets are used for this machine.	<b>N/A</b>
	– all unearthed conductors connected to the socket-outlet shall be protected against overcurrent and, when required, against overload in accordance with 7.2 and 7.3 separately from the protection of other circuits;	No socket-outlets are used for this machine.	<b>N/A</b>

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	– where the power supply to the socket-outlet is not disconnected by the supply disconnecting device for the machine or the section of the machine, the requirements of 5.3.5 apply;	No socket-outlets are used for this machine.	N/A
	– where fault protection is provided by automatic disconnection of supply, the disconnection time shall be in accordance with Table A.1 for TN systems or Table A.2 for TT systems;	No socket-outlets are used for this machine.	N/A
	– circuits supplying socket-outlets with a current rating not exceeding 20 A shall be provided with residual current protection (RCDs) with a rated operating current not exceeding 30 mA.	No socket-outlets are used for this machine.	N/A
15.2	Local lighting of the machine and of the equipment	-	-
15.2.1	General	-	-
	The ON/OFF switch shall not be incorporated in the lampholder or in the flexible connecting cord.	Not applicable.	N/A
	Stroboscopic effects from lights shall be avoided by the selection of appropriate luminaires.	Not applicable.	N/A
	Where fixed lighting is provided in an enclosure, electromagnetic compatibility should be taken into account using the principles outlined in 4.4.2.	Not applicable.	N/A
15.2.2	Supply	-	-
	The nominal voltage of the local lighting circuit shall not exceed 250 V between conductors. A voltage not exceeding 50 V between conductors is recommended.	Not applicable.	N/A
	Lighting circuits shall be supplied from one of the following sources (see also 7.2.6):	Not applicable.	N/A
	– a dedicated isolating transformer connected to the load side of the supply disconnecting device. Overcurrent protection shall be provided in the secondary circuit; – a dedicated isolating transformer connected to the line side of the supply disconnecting device. That source shall be permitted for maintenance lighting circuits in control enclosures only. Overcurrent protection shall be provided in the secondary circuit (see also 5.3.5);	Not applicable.	N/A

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	<ul style="list-style-type: none"> <li>– a circuit of the electrical equipment of the machine for lighting, with dedicated overcurrent protection;</li> <li>– an isolating transformer connected to the line side of the supply disconnecting device, provided with a dedicated primary disconnecting means (see 5.3.5) and secondary overcurrent protection, and mounted within the control enclosure adjacent to the supply disconnecting device;</li> <li>– an externally supplied lighting circuit (for example factory lighting supply). This shall be permitted in control enclosures only, and for the machine work light(s) where their total power rating is not more than 3 kW;</li> <li>– power supply units, for DC supply to LED light sources, fitted with isolating transformers (for example, in accordance with IEC 61558-2-6).</li> </ul>		
	Exception: where fixed lighting is out of reach of operators during normal operations, the provisions of 15.2.2 do not apply.	Not applicable.	<b>N/A</b>
15.2.3	Protection	-	-
	Local lighting circuits shall be protected in accordance with 7.2.6.	Not applicable.	<b>N/A</b>
15.2.4	Fittings	-	-
	Adjustable lighting fittings shall be suitable for the physical environment	Not applicable.	<b>N/A</b>
	The lampholders shall be: <ul style="list-style-type: none"> <li>– in accordance with the relevant IEC standard;</li> <li>– constructed with an insulating material protecting the lamp cap so as to prevent unintentional contact.</li> </ul>	Not applicable.	<b>N/A</b>
	Reflectors shall be supported by a bracket and not by the lampholder	Not applicable.	<b>N/A</b>
	Exception: where fixed lighting is out of reach of operators during normal operation, the provisions of 15.2.4 do not apply.	Not applicable.	<b>N/A</b>
16	Marking, warning signs and reference designations	-	-
16.1	General	-	-
	Warning signs, nameplates, markings, and	It can be of sufficient durability to	<b>Pass</b>

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Clause	Requirement - test	Result	Verdict
	identification plates shall be of sufficient durability to withstand the physical environment involved.	withstand the physical environment involved.	
	The markings shall be sufficiently durable to remain legible for the foreseen lifetime of the machine.		
16.2	Warning signs	-	-
16.2.1	Electric shock hazard	-	-
	Enclosures that do not otherwise clearly show that they contain electrical equipment that can give rise to a risk of electric shock shall be marked with the graphical symbol ISO 7010-W012 	 has been used for every electricity part	<b>Pass</b>
	The warning sign shall be plainly visible on the enclosure door or cover	 is plainly visible on the enclosure door.	<b>Pass</b>
	The warning sign may be omitted (see also 6.2.2 b)) for:	-	-
	– an enclosure equipped with a supply disconnecting device;	Not applicable.	<b>N/A</b>
	– an operator-machine interface or control station;	This clause has been met	<b>Pass</b>
	– a single device with its own enclosure (for example position sensor).	Not applicable.	<b>N/A</b>
16.2.2	Hot surfaces hazard	-	-
	Where the risk assessment shows the need to warn against the possibility of hazardous surface temperatures of the electrical equipment, the graphical symbol ISO 7010-W017 shall be used. 	Not applicable.	<b>N/A</b>
16.3	Functional identification	-	-
	Control devices, visual indicators and displays, used in man-machine interface shall be clearly and durably marked with regard to their functions either on or adjacent to the item.	The function test according to the instruction manual has been carried out during inspection.	<b>Pass</b>
	It is recommended that such markings are made in accordance with IEC 60417 and ISO 7000.	The symbols referred to IEC 60417 and/or ISO-7000 have been used for the operational function of this machine.	<b>Pass</b>
16.4	Marking of enclosures of electrical equipment	-	-



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	The following information shall be legibly and durably marked in a way that is plainly visible after the equipment is installed on enclosures that receive incoming power supplies:	It is in compliance with this requirement.	<b>Pass</b>
	– name or trade mark of supplier;	This data has been contained.	<b>Pass</b>
	– type designation or model, where applicable;	This data has been contained.	<b>Pass</b>
	– serial number where applicable;	This data has been contained.	<b>Pass</b>
	– main document number (see IEC 62023) where applicable;	This data has been contained.	<b>Pass</b>
	– rated voltage, number of phases and frequency (if AC), and full-load current for each incoming supply;	This data has been contained.	<b>Pass</b>
	It is recommended that this information is provided adjacent to the main incoming supply(ies).	Not applicable.	<b>N/A</b>
16.5	Reference designations	-	-
	All enclosures, assemblies, control devices, and components shall be plainly identified with the same reference designations as shown in the technical documentation	Appropriate identification has been found on the nameplate of this machine.	<b>Pass</b>
17	Technical documentation	-	-
17.1	General	-	-
	The information necessary for identification, transport, installation, use, maintenance, decommissioning and disposal of the electrical equipment shall be supplied.	Electrical circuit diagrams, component part lists, as well as the installation instruction have been included on the technical construction file.	<b>Pass</b>
	Annex I should be considered as guidance for the preparation of information and documents.	It is in compliance with this requirement.	<b>Pass</b>
17.2	Information related to the electrical equipment	-	-
	The following shall be supplied:	-	-
	a) where more than one document is provided, a main document for the electrical equipment as a whole, listing the complementary documents associated with the electrical equipment;	It has been provided.	<b>Pass</b>
	b) identification of the electrical equipment (see 16.4);	-	-
	c) information on installation and mounting including:	-	-
	• a description of the electrical equipment's installation and mounting, and its connection to the electrical supplies and where relevant other	It has been provided.	<b>Pass</b>

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Clause	Requirement - test	Result	Verdict
	supplies;		
	• short-circuit current rating of the electrical equipment for each incoming power supply;	It has been provided.	<b>Pass</b>
	• rated voltage, number of phases and frequency (if AC.), type of distribution system (TT, TN, IT) and full-load current for each incoming supply;	It has been provided.	<b>Pass</b>
	• any additional electrical supply(ies) requirements (for example maximum supply source impedance, leakage current) for each incoming supply;	It has been provided.	<b>Pass</b>
	• space required for the removal or servicing of the electrical equipment;	It has been provided.	<b>Pass</b>
	• installation requirements where needed to ensure that the arrangements for cooling are not impaired;	It has been provided.	<b>Pass</b>
	• environmental limitations (for example lighting, vibration, EMC environment, atmospheric contaminants) where appropriate;	It has been provided.	<b>Pass</b>
	• functional limitations (for example peak starting currents and permitted voltage drop(s)) as applicable;	It has been provided.	<b>Pass</b>
	• precautions to be taken for the installation of the electrical equipment relevant to the electromagnetic compatibility;	It has been provided.	<b>Pass</b>
	d) an instruction for the connection of simultaneously accessible extraneous-conductive parts in the vicinity of the machine (for example, within 2,5 metres) such as the following to the protective bonding circuit:	-	-
	• metallic pipes;	It has been provided.	<b>Pass</b>
	• fences;	It has been provided.	<b>Pass</b>
	• ladders;	It has been provided.	<b>Pass</b>
	• handrails.	It has been provided.	<b>Pass</b>
	e) information on the functioning and operation, including as applicable:	-	-
	• an overview of the structure of the electrical equipment (for example by structure diagram or overview diagram);	It has been provided.	<b>Pass</b>
	• procedures for programming or configuring, as necessary for the intended use;	It has been provided.	<b>Pass</b>
	• procedures for restarting after an unexpected	It has been provided.	<b>Pass</b>

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Clause	Requirement - test	Result	Verdict
	stop;		
	• a sequence of operation;	It has been provided.	<b>Pass</b>
	f) information on maintenance of the electrical equipment, as appropriate, including:	-	-
	• frequency and method of functional testing;	It has been provided.	<b>Pass</b>
	• instructions on the procedures for safe maintenance and where it is necessary to suspend a safety function and/or protective measure (see 9.3.6);	It has been provided.	<b>Pass</b>
	• guidance on the adjustment, repair, and frequency and method of preventive maintenance;	It has been provided.	<b>Pass</b>
	• details of the interconnections of the electrical components subject to replacement (for example by circuit diagrams and/or connection tables);	It has been provided.	<b>Pass</b>
	• information on required special devices or tools;	It has been provided.	<b>Pass</b>
	• information on spare parts;	It has been provided.	<b>Pass</b>
	• information on possible residual risks, indication of whether any particular training is required and specification of any necessary personal protective equipment;	It has been provided.	<b>Pass</b>
	• where applicable, instructions to restrict availability of key(s) or tool(s) to skilled or instructed persons only;	It has been provided.	<b>Pass</b>
	• settings (DIP-switches, programmable parameter values, etc);	It has been provided.	<b>Pass</b>
	• information for validation of safety related control functions after repair or modification, and for periodic testing where necessary;	It has been provided.	<b>Pass</b>
	g) information on handling, transportation and storage as appropriate (for example dimensions, weight, environmental conditions, possible ageing constraints);	It has been provided.	<b>Pass</b>
	h) information for proper disassembly and handling of components (for example for recycling or disposal).	It has been provided.	<b>Pass</b>
18	Verification	-	-
18.1	General	-	-
	The extent of verification will be given in the dedicated product standard for a particular	It is in compliance with this requirement.	<b>Pass</b>

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Clause	Requirement - test	Result	Verdict
	machine.		
	Where there is no dedicated product standard for the machine, the verifications shall always include the items a), b), c) and h) and may include one or more of the items d) to g):	It has a dedicated product standard for the machine.	<b>N/A</b>
	a) verification that the electrical equipment complies with its technical documentation;	Not applicable.	<b>N/A</b>
	b) verification of continuity of the protective bonding circuit (Test 1 of 18.2.2);	Not applicable.	<b>N/A</b>
	c) in case of protection against indirect contact by automatic disconnection, conditions for protection by automatic disconnection shall be verified according to 18.2;	Not applicable.	<b>N/A</b>
	d) insulation resistance test (see 18.3);	Not applicable.	<b>N/A</b>
	e) voltage test (see 18.4);	Not applicable.	<b>N/A</b>
	f) protection against residual voltage (see 18.5);	Not applicable.	<b>N/A</b>
	g) verification that the relevant requirements of 8.2.6 are met;	Not applicable.	<b>N/A</b>
	g) functional tests (see 18.6).	Not applicable.	<b>N/A</b>
	When these tests are performed, it is recommended that they follow the sequence listed above. Where the sequence cannot be followed verification a) and b) shall be conducted first.	Test has been carried out as the sequence listed below.	<b>Pass</b>
	When the electrical equipment is modified, the requirements stated in 18.7 shall apply.	Attention for the test of re-construction has been stated on the instruction manual.	<b>Pass</b>
	For verifications that include measurement, measuring equipment in accordance with the IEC 61557 series is recommended.	It is in compliance with this requirement.	<b>Pass</b>
	The results of the verification shall be documented.	It is in compliance with this requirement.	<b>Pass</b>
18.2	Verification of conditions for protection by automatic disconnection of supply	-	-
18.2.1	General	-	-
	The conditions for automatic disconnection of supply (see 6.3.3) shall be verified by tests.	Appropriate test condition has been set according to this requirement.	<b>Pass</b>
	Test 1 verifies the continuity of the protective bonding circuit.	It is in compliance with this requirement.	<b>Pass</b>
	Test 2 verifies the conditions for protection by automatic disconnection of the supply in TN systems.	It is in compliance with this requirement.	<b>Pass</b>

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Clause	Requirement - test	Result	Verdict
	For TN-systems, those test methods are described in 18.2.2 and 18.2.3; their application for different conditions of supply are specified in 18.2.4.	It is in compliance with this requirement.	<b>Pass</b>
	For TT systems, see Clause A.2.	Not applicable.	<b>N/A</b>
	For IT systems, see IEC 60364-6.	Not applicable.	<b>N/A</b>
	Where RCDs are used in the electrical equipment, their function shall be verified in accordance with the manufacturer's instructions. The test procedure and test interval shall be specified in the maintenance instructions.	Not applicable.	<b>N/A</b>
18.2.2	Test 1 – Verification of the continuity of the protective bonding circuit	-	-
	The resistance between the PE terminal (see 5.2 and Figure 4) and relevant points that are part of the protective bonding circuit shall be measured with a current between at least 0,2 A and approximately 10 A derived from an electrically separated supply source (for example SELV, see 414 of IEC 60364-4-41:2005) having a maximum no-load voltage of 24 V AC or DC.	Appropriate test condition has been set according to this requirement.	<b>Pass</b>
	The resistance measured shall be in the expected range according to the length, the cross sectional area and the material of the related protective conductors and protective bonding conductor(s).	It is in compliance with this requirement.	<b>Pass</b>
	Earthed PELV supplies can produce misleading results in this test and therefore shall not be used.	It is in compliance with this requirement.	<b>Pass</b>
18.2.3	Test 2 – Fault loop impedance verification and suitability of the associated overcurrent protective device	-	-
	The connections of each power supply including the connection of the associated protective conductor to the PE terminal of the machine, shall be verified by inspection.	It is in compliance with this requirement.	<b>Pass</b>
	The conditions for the protection by automatic disconnection of supply in accordance with 6.3.3 and Annex A shall be verified by both:	-	-
	a) verification of the fault loop impedance by:	-	-
	– calculation, or	It is in compliance with this requirement.	<b>Pass</b>
	– measurement in accordance with A.4, and	Not applicable.	<b>N/A</b>
	b) confirmation that the setting and characteristics of the associated overcurrent	It is in compliance with this requirement.	<b>Pass</b>

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Clause	Requirement - test	Result	Verdict
	protective device are in accordance with the requirements of Annex A, and where a power drive system (PDS) is used, confirmation that the setting and characteristics of the protective device(s) associated with a PDS are in accordance with the converter manufacturer's and protective device manufacturer's instructions.		
18.2.4	Application of the test methods for TN-systems	-	-
	When Test 2 of 18.2.3 is carried out by measurement, it shall always be preceded by Test 1 of 18.2.2.	It is in compliance with this requirement.	<b>Pass</b>
	The tests that are necessary for machines of different status are specified in Table 9.	It is in compliance with this requirement.	<b>Pass</b>
18.3	Insulation resistance tests	-	-
	When insulation resistance tests are performed, the insulation resistance measured at 500 V DC. between the power circuit conductors and the protective bonding circuit shall be not less than 1 MΩ. The test may be made on individual sections of the complete electrical installation.	Test voltage=500Vd.c, and the protective bonding circuit do not less than 1 MΩ	<b>Pass</b>
	Exception: for certain parts of electrical equipment, incorporating for example busbars, conductor wire or conductor bar systems or slip-ring assemblies, a lower minimum value is permitted, but that value shall not be less than 50 kΩ.	Not applicable.	<b>N/A</b>
	If the electrical equipment of the machine contains surge protection devices which are likely to operate during the test, it is permitted to either:	-	-
	– disconnect these devices, or	Not applicable.	<b>N/A</b>
	– reduce the test voltage to a value lower than the voltage protection level of the surge protection devices, but not lower than the peak value of the upper limit of the supply (phase to neutral) voltage.	Not applicable.	<b>N/A</b>
18.4	Voltage tests	-	-
	When voltage tests are performed, tests and test equipment shall be in accordance with EN 61180.	It is in compliance with this requirement.	<b>Pass</b>
	The test voltage shall be at a nominal frequency of 50 Hz or 60 Hz.	The test voltage is 50Hz.	<b>Pass</b>
	The maximum test voltage shall have a value of	It is in compliance with this requirement.	<b>Pass</b>

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Clause	Requirement - test	Result	Verdict
	twice the rated supply voltage of the equipment or 1 000 V, whichever is the greater.		
	The maximum test voltage shall be applied between the power circuit conductors and the protective bonding circuit for a period of approximately 1 s.	It is in compliance with this requirement.	<b>Pass</b>
	The requirements are satisfied if no disruptive discharge occurs.	It is in compliance with this requirement.	<b>Pass</b>
	Components and devices that are not rated to withstand the test voltage shall be disconnected during testing.	It is in compliance with this requirement.	<b>Pass</b>
	Components and devices that have been voltage tested in accordance with their product standards may be disconnected during testing.	It is in compliance with this requirement.	<b>Pass</b>
18.5	Protection against residual voltages	-	-
	Tests shall be performed to ensure compliance with 6.2.4	After this testing the machine is operating normally.	<b>Pass</b>
18.6	Functional tests	-	-
	The functions of electrical equipment shall be tested.	The functions of the equipment related to safety are tested, and there is no abnormal condition in this machine.	<b>Pass</b>
	The function of circuits for electrical safety (for example earth fault detection) shall be tested.	It is tested, and there is no abnormal condition in this machine.	<b>Pass</b>
18.7	Retesting	-	-
	Where a portion of the machine or its associated equipment is changed or modified, the need for re-verification and testing of the electrical equipment shall be considered.	It is in compliance with this requirement.	<b>Pass</b>
	Particular attention should be given to the possible adverse effects that retesting can have on the equipment (for example overstressing of insulation, disconnection/reconnection of devices).	It is in compliance with this requirement.	<b>Pass</b>

Annex A

The EN 60204-1 test report



# EN60204-1 Test Report

Manufacturer: Wenzhou Huaqiao Packing Machine Factory

EUT Vacuum Packing Machine

Model DZ-400/2SB

Test Equipment Withstand Voltage Tester:ZC25-3  
Insulation Resistance Tester:ZC25-4  
Grounding Tester:JD-8

Test conditions 10A/50HZ

According to: Chapter 52 and 53 of EN 60204-1

Date: 19 Sep. 2022

## 1. Continuity of the protective bonding circuit

Test Points	Test Result(m $\Omega$ )	Test Current(A)	Voltage Drop(V)
PE-Control Panel	52	10	0.52
PE-Electrical Box	72	10	0.72
PE-Motor	65	10	0.65
Transformer1	55	10	0.55

## 2. Insulation Resistance

Test Points	Test Result(M $\Omega$ )
PE-Power Inlet	220
PE-Motor	250
Transformer1	240

## 3. Withstanding Voltage

Test Points	Breakdown
PE-Power Inlet	No
PE-Motor	No
Transformer1	No

### 3.3 Airborne noise test report

# Noise Test Report

Manufacturer	Wenzhou Huaqiao Packing Machine Factory		
EUT	Vacuum Packing Machine		
Model	DZ-400/2SB	Date	19 Sep. 2022
Test Condition	Running Free		
Test Equipment	Digital Sound Level Meter Type Test 1350A Manufacturer: TES Electronic Industrial Co., LTD.		

Give as “dB (A)” unit, A-Weighted

	Cycle 1	Cycle 2	Cycle 3	Cycle 4	Cycle 5	Average
Position 1	50	49	50	49	50	49.6
Position 2	51	52	51	52	52	51.6
Position 3	48	47	48	49	48	48.0
Position 4	49	50	49	50	49	49.4
Average of 1 to 4						49.7

Manufacturer	Wenzhou Huaqiao Packing Machine Factory		
EUT	Vacuum Packing Machine		
Model	DZ-400/2SB	Date	19 Sep. 2022
Test Condition	At normal working		
Test Equipment	Digital Sound Level Meter Type Test 1350A Manufacturer: TES Electronic Industrial Co., LTD.		

Give as “dB (A)” unit, A-Weighted

	Cycle 1	Cycle 2	Cycle 3	Cycle 4	Cycle 5	Average
Position 1	70	69	69	70	70	69.6
Position 2	69	70	69	71	71	70.0
Position 3	69	71	69	70	70	69.8
Position 4	70	71	70	71	70	70.4
Average of 1 to 4						70.0

## **Annex: Technical information**

A.1 Declaration of conformity with signature

A.2 Specifications table

A.3 Safety pictures

A.4 Mechanical drawing

A.5 Electrical system

A.6 Instruction manual

## A.1 Declaration of conformity with signature

# EC - DECLARATION OF CONFORMITY



## COMPANY INFORMATION

Name : Wenzhou Huaqiao Packing Machine Factory  
Address : No. 15 Gangfu Road, Konggang New Area, Wenzhou, Zhejiang, China  
Phone / Fax : +86-577-88633888 / 88628808

## MANUFACTURER INFORMATION

Name : Wenzhou Huaqiao Packing Machine Factory  
Address : No. 15 Gangfu Road, Konggang New Area, Wenzhou, Zhejiang, China  
Phone / Fax : +86-577-88633888 / 88628808

Product Name : Vacuum Packing Machine  
Product Type :  
Product Model(s) : DZ-260/PD, DZ-300/PD, DZ-400/ZT, DZ-450/ZT, DZ-500/ZT, DZ-400/2E, DZ-450/2E, DZ-500/2E, DZ-600/2E, DZ-400/2D, DZ-450/2D, DZ-500/2D, DZ-600/2D, DZ-800/2L, DZ-900/2L, DZ-1000/2L, DZ-1100/2L, DZ-400/2SB, DZ-500/2SB, DZ-600/2SB, DZ-700/2SB, DZ-800/2SB, DZ-400/2SA, DZ-500/2SA, DZ-600/2SA, DZ-700/2SA, DZ-800/2SA, DZ-650/4SB, DZW-600/4SB, DZA-600/2SB

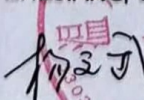

Related Directives : 2006/42/EC - Machinery Directive  
2014/35/EU - Low Voltage Directive

Harmonized Standards : EN ISO 12100:2010 Safety Of Machinery - General Principles For Design - Risk Assessment And Risk Reduction.  
EN 415-5:2006+A1:2009 Safety of packaging machines - Part 5: Wrapping machines.  
EN 60204-1: 2018 Safety of machinery. Electrical equipment of machines. General requirements.

*The described product/machines meet the essential requirements of the above mentioned standards and in our delivered version; comply with the appropriate basic essential health and safety requirements of the based on Machinery Directive 2006/42/EC, Low Voltage Directive 2014/35/EU. In case of alteration of the machine, not agreed upon by Wenzhou Huaqiao Packing Machine Factory; this declaration will lose its validity.*

Production date : 2022.9.24  
Date of CE marking : 2022.9.24  
File Number : HQ-150803

## SIGNED ON BEHALF OF THE COMPANY

Name & Position of the Authorized Person : Yang Wenwu / General Manager  
PLACE/DATE : ZHEJIANG, CHINA / Sep. 24, 2022  
Signature :   
Stamp : 

## A.2 Specifications table

Specification table

model	power supply	motor power	hot seal power	Extreme pressure	Vacuum pumping rate	Thermal sealing length	Thermal sealing width	Vacuum chamber depth	Dimension	Outer package size	Net weight Gross weight
DZ-260/PD	AC 220V/50HZ 110V/60HZ	0.37kw	0.15kw	0.05hPa(mbar)	14.4m <sup>3</sup> /h	260mm	5mm	50mm	502×330×380mm	590×405×450mm	37.2Kg 46Kg
DZ-300/PD	AC 220V/50HZ 110V/60HZ	0.37kw	0.15kw	0.05hPa(mbar)	14.4m <sup>3</sup> /h	300mm	5mm	50mm	525×400×380mm	615×475×450mm	40Kg 49Kg
DZ-400/ZT	AC 220V/50HZ 110V/60HZ	0.90kw	0.60kw	0.1hPa(mbar)	20m <sup>3</sup> /h	390mm	10mm	65mm	540×490×500mm	640×590×630mm	62.5Kg 77.5Kg
DZ-450/ZT	AC 220V/50HZ 110V/60HZ	0.90kw	0.60kw	0.1hPa(mbar)	20m <sup>3</sup> /h	440mm	10mm	65mm		670×660×615mm	70Kg 83Kg
DZ-500/ZT	AC 220V/50HZ 110V/60HZ	0.90kw	0.80kw	0.1hPa(mbar)	20m <sup>3</sup> /h	490mm	10mm	70mm		750×700×615mm	77Kg 90Kg
DZ-400/2E	AC 220V/50HZ 110V/60HZ	0.90kw	0.60kw	0.1hPa(mbar)	20m <sup>3</sup> /h	390mm	10mm	70mm	540×490×960mm	650×590×1010mm	70Kg 87Kg
DZ-450/2E	AC 220V/50HZ 110V/60HZ	0.90kw	0.60kw	0.1hPa(mbar)	20m <sup>3</sup> /h	440mm	10mm	65mm		670×660×1060mm	80Kg 94Kg
DZ-500/2E	AC 220V/50HZ 110V/60HZ	0.90kw	0.80kw	0.1hPa(mbar)	20m <sup>3</sup> /h	490mm	10mm	70mm	640×570×970mm	750×670×1080mm	97Kg 117Kg
DZ-600/2E	AC 380V/50HZ 220V/60HZ	1.50kw	1.00kw	0.1hPa(mbar)	40m <sup>3</sup> /h	590mm	10mm	75mm	742×672×910mm	840×760×1110mm	151Kg 178Kg
DZ-400/2D	AC 220V/50HZ 110V/60HZ	0.90kw	0.40kw/0.7Kw	≤1hPa(mbar)	20m <sup>3</sup> /h	390mm	10mm	Customizable	490×420×925mm	615×565×1065mm	90Kg 107Kg
DZ-450/2D	AC 220V/50HZ 110V/60HZ	0.90kw	0.40kw/0.7Kw	≤1hPa(mbar)	20m <sup>3</sup> /h	390mm	10mm	Customizable	490×420×925mm	615×565×1065mm	90Kg 107Kg



DZ-500/2D	AC 220V/50HZ 110V/60HZ	0.90kw	0.60kw/0.9Kw	≤1hPa(mbar)	20m <sup>3</sup> /h	490mm	10mm	Customizable	575×527×930mm	700×670×1072mm	122Kg 144Kg
DZ-600/2D	AC 380V/50HZ 220V/60HZ	1.50kw	0.90kw/1.1Kw	≤0.1hPa(mbar)	40m <sup>3</sup> /h	590mm	10mm	Customizable	675×625×945mm	800×756×1087mm	180Kg 208Kg
DZ-800/2L	AC 380V/50HZ 220V/60HZ	1.50kw	1.60kw	≤0.1hPa(mbar)	40m <sup>3</sup> /h	750/560mm	10mm	100mm	855×675×941mm	1135×890×1100mm	225Kg 270Kg
DZ-900/2L	AC 380V/50HZ 220V/60HZ	1.50kw	1.60kw	≤0.1hPa(mbar)	40m <sup>3</sup> /h	750/560mm	10mm	100mm	855×675×941mm	1135×890×1100mm	225Kg 270Kg
DZ-1000/2L	AC 380V/50HZ 220V/60HZ	1.50kw	1.80kw	≤0.1hPa(mbar)	40m <sup>3</sup> /h	850/560mm	10mm	100mm	955×675×941mm	1235×890×1100mm	235Kg 280Kg
DZ-1100/2L	AC 380V/50HZ 220V/60HZ	1.50kw	2.0kw	≤0.1hPa(mbar)	40m <sup>3</sup> /h	950/560mm	10mm	100mm	1055×675×941mm	1335×890×1100mm	245Kg 290Kg
DZ-400/2SB	AC 220V/50HZ 110V/60HZ	0.90kw	0.60kw	0.1hPa(mbar)	20m <sup>3</sup> /h	390mm	10mm		990×610×950mm	1090×680×1020mm	131Kg 155Kg
DZ-500/2SB	AC 380V/50HZ 220V/60HZ	0.75kw×2	0.80kw	0.1hPa(mbar)	20m <sup>3</sup> /h×2	490mm	10mm		1250×660×950mm	1340×740×1030mm	174Kg 224Kg
DZ-600/2SB	AC 380V/50HZ 220V/60HZ	1.50kw	1.00kw	0.1hPa(mbar)	40m <sup>3</sup> /h	590mm	10mm		1450×660×950mm	1530×740×1020mm	220Kg 272Kg
DZ-700/2SB	AC 380V/50HZ 220V/60HZ	0.75kw×3	1.30kw	≤0.6hPa(mbar)	20m <sup>3</sup> /h×3	690mm	10mm		1650×730×970mm	1730×815×1045mm	267Kg 330Kg
DZ-800/2SB	AC 380V/50HZ 220V/60HZ	0.75kw×3	1.30kw	≤0.6hPa(mbar)	20m <sup>3</sup> /h×3	690mm	10mm		1650×730×970mm	1730×815×1045mm	267Kg 330Kg
DZ-400/2SA	AC 220V/50HZ 110V/60HZ	0.90kw	0.60kw	0.1hPa(mbar)	20m <sup>3</sup> /h	390mm	10mm	40mm	995×615×960mm	1090×680×1020mm	129Kg 153Kg

DZ-500/2SA	AC 380V/50HZ 220V/60HZ	0.75kw×2	0.80kw	0.1hPa(mbar)	20m <sup>3</sup> /h×2	490mm	10mm	40mm	1250×660×960mm	1340×740×1030mm	182Kg 232Kg
DZ-600/2SA	AC 380V/50HZ 220V/60HZ	1.50kw	1.00kw	0.1hPa(mbar)	40m <sup>3</sup> /h	590mm	10mm	40mm	1450×660×960mm	1530×740×1120mm	215Kg 267Kg
DZ-700/2SA	AC 380V/50HZ 220V/60HZ	0.75kw×3	1.30kw	≤0.6hPa(mbar)	20m <sup>3</sup> /h×3	690mm	10mm	40mm	1650×730×970mm	1715×800×1110mm	267Kg 330Kg
DZ-800/2SA	AC 380V/50HZ 220V/60HZ	0.75kw×3	1.30kw	≤0.6hPa(mbar)	20m <sup>3</sup> /h×3	690mm	10mm	40mm	1650×730×970mm	1715×800×1110mm	267Kg 330Kg
DZ-650/4SB	AC 380V/50HZ 220V/60HZ	2.20kw	1.20kw×2	0.1hPa(mbar)	63m <sup>3</sup> /h	600mm	10mm		1450×895×960mm	1540×985×1080mm	322Kg 378Kg
DZW-600/4SB	AC 380V/50HZ 220V/60HZ	2.20kw	1.20kw×2	0.1hPa(mbar)	63m <sup>3</sup> /h	590mm	10mm		1455×830×940mm	1530×980×1040mm	322Kg 378Kg
DZA-600/2SB	AC 380V/50HZ 220V/60HZ	3.00kw	1.10kw×2	≤0.1hPa(mbar)	100m <sup>3</sup> /h	590mm	10mm		1455×940×975mm	1530×1030×1060mm	370Kg 420Kg

### A.3 Safety pictures

outside look of the machine









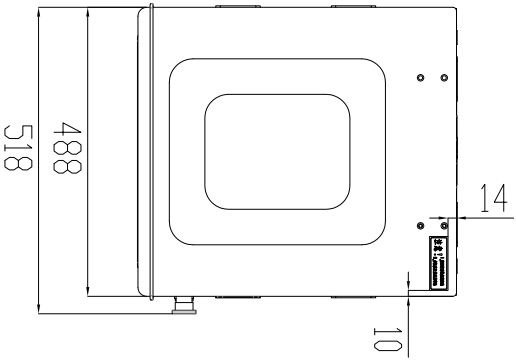
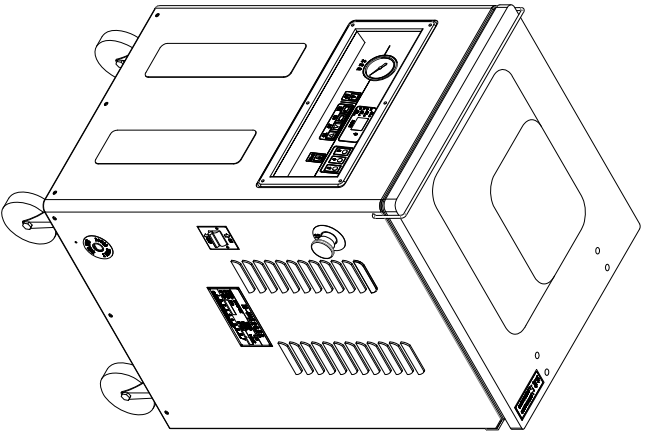
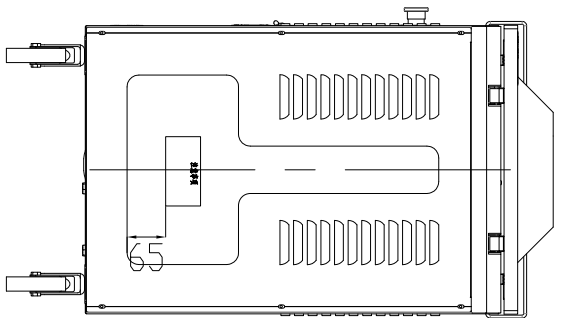
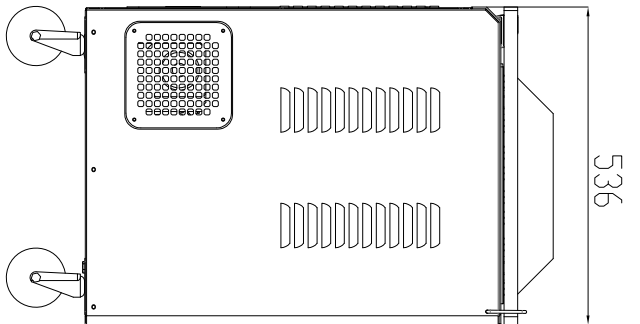
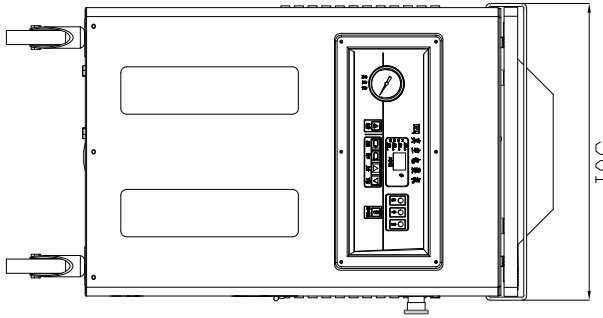
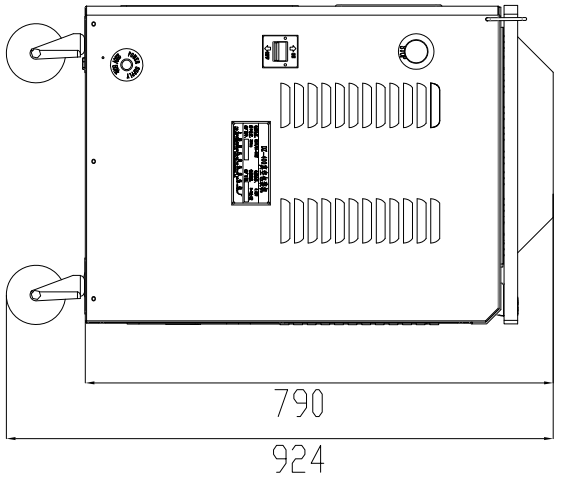






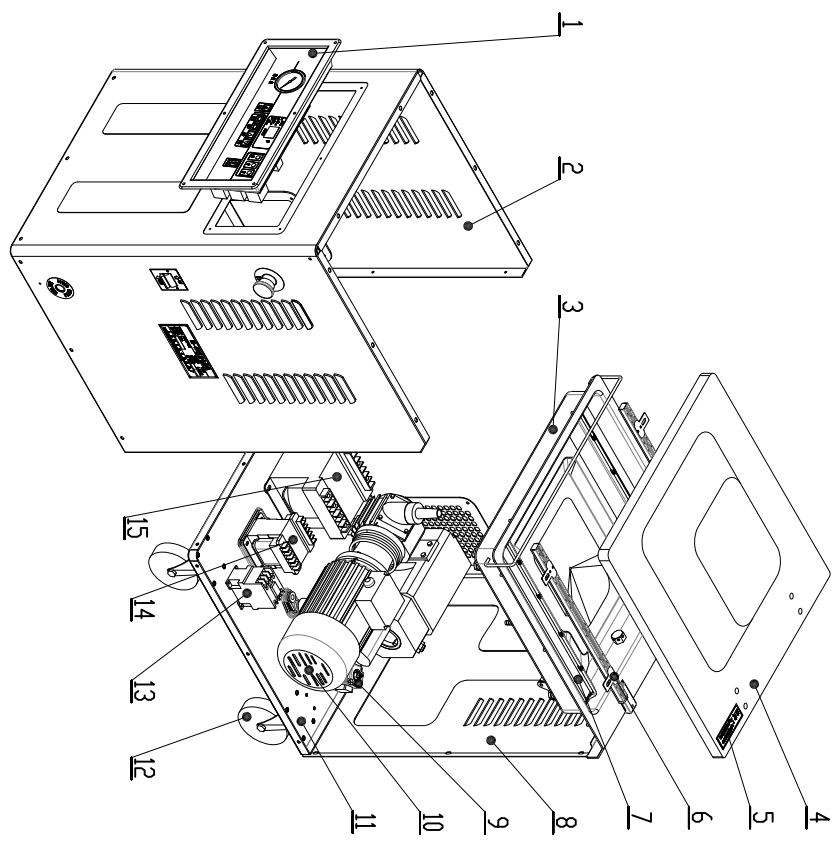
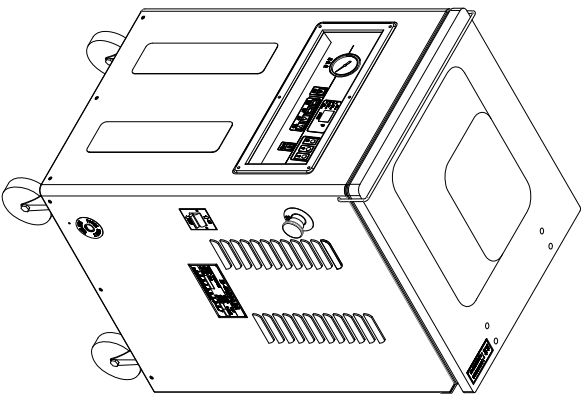


## A.4 Mechanical drawing



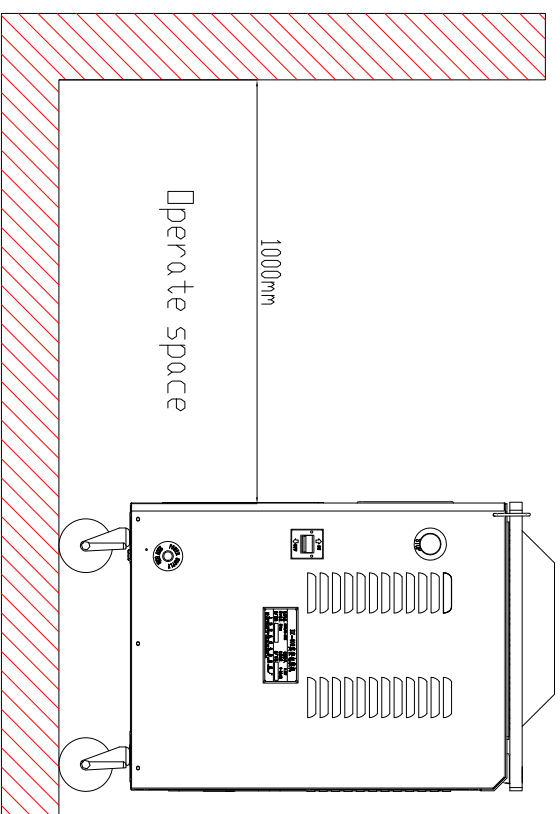
比例	1 : 13	Overall diagram				温州市华侨包装机械厂			
重量								整机装配	
数量	1								
设计	方斌								
校对		日期	2015年6月15日						
审核		复审		阶段标记	第1页	共1页	40AL		
工艺		批准							

SN	Name	Qty.	Auth.
1	Control panel	1	
2	Shell	1	
3	Vacuum chamber welding	1	
4	Vacuum cover	1	
5	Warning signs	1	
6	Silica gel	2	
7	Sealing strip	2	
8	Back cover	1	
9	Solenoid valve	1	
10	Vacuum pump	1	
11	Floor	1	
12	Casters	4	
13	AC contactor	1	
14	Small transformer	1	
15	Big transformer	1	

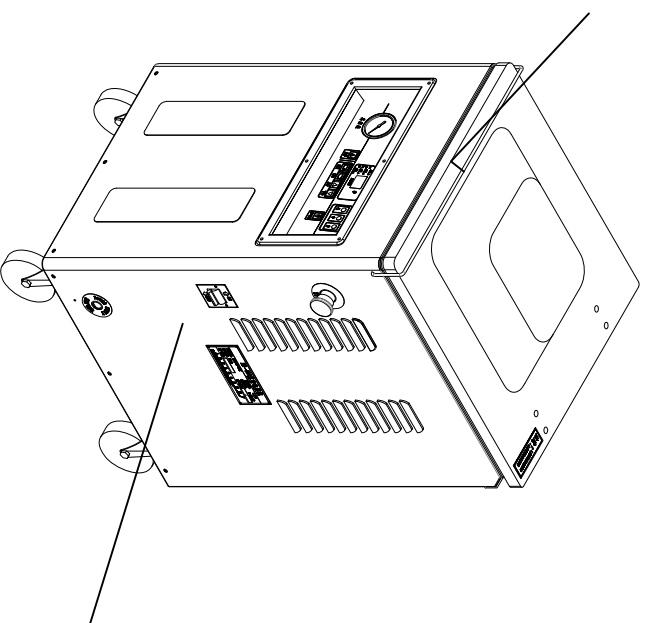


比例	1:10	Assembly diagram				温州市华侨包装机械厂
重量						示意图
数量						
设计	方斌	日期	复审	阶段标记		第1页
校对		复审	标准			
审核		批准				共1页
工艺						

单室真空机




比例	1 : 10	Operate space diagram				温州市华侨包装机械厂
重量						示意图
数量						
设计	方斌	日期		阶段标记		第1页 共1页
校对		复审				
审核		标注				单室真空机
工艺		批准				



比例	1 : 13					warning mark position diagram	温州市华侨包装机械厂	
重量								
数量	1							
设计	方斌	日期	2015年6月15日					
校对		复审				阶段标记	第1页	
审核		标注						
工艺		批准						
							共1页	40AL

Nameplate

	<b>DZ-</b>	<b>VACUUM MACHINE</b>	
<b>Voltage:</b>	<input type="text"/>	<b>Power:</b>	<input type="text"/>
<b>Sealing Length:</b>	<input type="text"/>	<b>Pack Speed:</b>	<b>2-3 times/min</b>
<b>Serial NO:</b>	<input type="text"/>	<b>Date MFG:</b>	<input type="text"/>
<b>WENZHOU HUAQIAO PACKING MACHINE FACTORY</b>			
HTTP://WWW.HUAQIAOPM.COM TEL:0086-577-88998813 FAX:0086-577-88996613			



## A.5 Electrical system





## DZ400/DZ500 Electrical Components List

SN	Code	Name	Supplier	Mode	Spec	Qty	Auth
1	QF	Circuit Breaker	CHNT	DZ47-32	2P 32A	1	CE
2	KM	AC Contactor	CHNT	CJX2-2510	25A/220V	1	CE
3	SQ	Limit Switch	Schneider	XCB-K1/411		1	CE
4	T1	Transformer	Ouhai yulong	BK-25 80VA	220V/24V、18V		CE
5	T2	Transformer	Ouhai yulong	BK-25 800VA	220V/36V	1	CE
6	M	Motor	Mitsubishi	HC-UFS	220VAC/0.9KW		CE
7	ESP	Emergency Button	Schneider	ZB4-BE102C	3A/240V		CE

## A.6 Instruction manual

Original Instruction

**SZQ SERIES VACUUM PACKAGER**  
**(MODEL:DZ400.DZQ400/2SB.DZQ500/2SB)**

**OPERATION INSTRUCTION**

**Before operation, please read this  
operational manual carefully**

## **1.Overview**

**Model DZQ400/500 series vacuum packager works in a brand-new way that it makes the inside of the bag vacuum and then seals it at once, and just because of the high vacuum, extremely less air is left in the bag, resulting in restraining the propagation of bacterium etc.microbe, avoiding the goods being mildew and rotten by oxidation and,at the same time, some spongy goods can be made reduced in the volume after being vacuum packed and thus become easy to transport and store.**

## **2.Purpose**

**This packager uses compound film bags to do vacuum hot-sealing packing for various foods, medicines, native products, aquatic products chemical materials, hardwares and electronic components in the state of solid, powder, paste or liquid, which can effectively prevent the packed goods from being rotten and gone bad caused by the oxidation of grease goods or the propagation of the bacterium found of oxygen, keep the quality, freshness, taste, color for an extended storage and make it easy to transport and export the packed goods.**

## **3.Property feature**

**1) for the packager with a single-chamber, the process of packing is shown in a very clear way with the organic glass cover equipped.**

**2) with the two vacuum chambers work in turn to have the packing and sealing well linked up with the preparations, the efficiency is greatly enhanced. both upper and lower work chambers are made of stainless steel, reasonable in the structure, good gas tightness, beautiful, durable and in line with the requirement of food sanitation and anti-rottenness.**

**This packager is set with the function of combining vacuum, sealing, printing in one process and, for different packing materials and requirements, with the adjustable device for the vacuum, hot-sealing temperature and time so as for the users to get optimum selection and adjustment for an optimum effect of packing. the printing device with a convenient letter-change and clear printing is available per the desire of the users, with which, users may print on the sealing at the same time for sealing the valid period,**

date of ex-factory, code of ex-factory etc. to meet with the provision of the national food label law.the packager features advanced design, full function, stable and reliable performance, good sealing strength, strong packing capacity, convenient operation and service, high economic benefit etc. and is the idealer machinery for the vacuum package.

#### 4.Major technical parameters

- 1) Lowest absolute pressure intensity in the vacuum chamber 1kpa.
- 2) Volume of vacuum chamber(LxWxH): 440×440×130mm ( 400single-chamber)  
450×400×130mm (400double-chamber)  
570×470×90mm 500 chamber)
- 3) Packing speed: 1-3 times/min.
- 4) Power supply: three-phase 380V 50HZ, single-phase 220V 50HZ
- 5) Motor power: 0.75KWEx2(500double-chamber)  
0.75KW(400 single- and double-chamber)
- 6) Hot-sealing power: 0.9KW (500double-chamber)  
0.8KW (400double-chamber single-chamber)
- 7) Evacuation rate: 11L/S(500double-chamber)  
5.5L/S(400single-and double-chamber)
- 8) External dimension(LxWxH):
- 9) Weight: 120kg(400 single-chamber), 180kg (400 double-chamber)  
215kg(500 double-chamber) 520×490×930mm single-and  
990×720×930mm (400 double-  
1300×770×960mm 500-chamber)

#### 5.Structure and principle

This packager consists of the upper and lower vacuum chambers, body, electrics, vacuum system five parts. the upper chamber's top is set with a group of hot-pressing sealing device and the lower one is setwith the hot-pressing sealing device. the heating element is the

Ni-cr tape and mounted on the bakelite hot-pressing stand, which is absolutely insulated from the vacuum chamber and closely fitted on the gasbag,



which, before hot-sealing, is in a low vacuum state and, during hot-sealing, is made interlinked with air through the hot-sealing electromagnetic valve yv and enlarged with its volume so as to have the heating head (ni-cr tape) pressing downward on the sealing while heating, both heating temperature and time are adjustable.

The power supply of the packager: AC 380V, 50HZ, three-phase four-wire with the neutral input. motor of the vacuum pump: AC 380V, 2X0.75KW, 2800r.p.m. the heating system is of voltage-regulation type, i.e. the primary of the hot-sealing transformer is 380V, the secondary has three shifts of 28V, 32V and 36V adjustable with the switch on the panel. the hot sealing temperature is changed by means of the voltage of the secondary while the hot sealing time is adjusted by the digital display time relay on the panel. the vacuum system consists of evacuation, hot-sealing and deflation electromagnetic valves Yv and used as the executive mechanism.

Evacuation from the vacuum chamber starts once the vacuum pump is enabled and it will stop when the intended vacuum reaches, the whole control procedure turns into next one then. this packager uses a single-stage rotary-sheet type vacuum pump (see the manual for the details of the technical property of the pump). see fig. 1.2.3. for the structure and panel, the electric principle and the vacuum system principle, respectively.

## 6. Operation procedure

1) turn on the power: enable the power switch, the quick-stop indicator lights. set the evacuation & hot-sealing dial to the relative time.

2) press down the cover, the evacuation (vacuum) indicator lights, the vacuum pump starts evacuation and the cover is automatically attracted. vacuum can be adjusted by means of the vacuum time dial per the packing requirement and adjustment should be done from low to high with a small amplitude.

3) when the set time (the desired vacuum) reaches, evacuation ends and the evacuation indicator goes out. set the power switch to the vacuum position, the vacuum packing begins and the air-filling indicator goes out.

4) Along with the evacuation indicator goes out, the hot-sealing indicator lights to enter the sealing procedure. the adjustable knobs for both hot-sealing time and temperature on the panel are equipped with for the materials of different thickness. to adjust the knobs,use a small amplitude of rotation so as to prevent the hot-sealing temperature from being raised in a sudden, thus burning the hot-sealing fittings.

5) When the set time for hot-sealing reaches, the hot-sealing indicator goes out and the hot-sealing ends,then air goes into the vacuum chamber via the electromagnetic valve till the cover lifed automatically, the process of vacuum, air-filling and packing endsand next such a process is ready.

#### 7.Regulation and operaton

1) When packed, check with the list of packing if the accessorie are full, if the screws on every location are loose and if the upper vacuum chamber flexible to move left and right.

2) Properly lubricate every moving part, oil hole and oil nozzle and,in according with the manual for the vacuum pump, properly inject engine oil window, which shoule not be lower the 1/4 height of the oil window and max. oil quantity should not exceed 3/4 height of the oil window.

#### 3) Regulation

a. regulation of the vacuum in the vacuum chamber optimize the time of evacuation per the need of the packed goods to get an appropriate vacuum, the longer the time for evacuation, the higher the vacuum to be gained.

b. Regulation of hot-sealing temperature and timeo ptimize the hot-sealing temperature(3-shift adjustable) and time (0-9.9s) per the different bag material and packed goods to get an optimum strength of sealing. to regulate, generally do it from low to high till the desired appearance and strength of sealing.

#### 4)Process of operation

a.place the goods to be packed in the bag(plastic compound or al-foil compound bag), and put the bag into one of the lower vacuum chambers,lift the bag-pressing rod and evenly arrange the opening of the bags under the hot-pressingstand.

b.Turn on the power switch,the power indicator lights and then cover the lower vacuum chamber with the upper one for automatic sealing, and

meanwhile, do preparations in the other lower vacuum chamber so as to enhance the efficiency of packing.

c. Set the power switch to "off" position and cut off the main power when the whole procedure of packing ends.

## 8. Maintenance

1) Before operation, carefully read the manual to get familiar with the way of regulation and operation.

2) Periodically maintain and lubricate the vacuum pump according to its manual and pay much attention not to let it reversedly run in order to prevent it against being damaged and the oil from reversedly apraying inside of it till the vacuum system.

3) Often check if the earth line well contacted to make sure of safety

4) Often check if there is any foreign matter on the sealing dyeing cloth (ptefe) and if it is flat to make sure of the sealing strength.

5) Turn off the power on time in case of a failure and, if necessary, press the quick-stop button, then lift the cover after deflation and turn off the voltage to examine the cause and troubleshoot.

## 9. Common troubles and troubleshooting

### 1) No vacuum formed or low vaccum

a. Reversed running of the vacuum pump. check if its direction of running in line with the arrow of the pump motor and, if not, adjust the phase.

b. When newly used, the sealing ring of the upper chamber may not be well fitted with the plane of the lower one, so slight pressure is required to be applied on the cover to make both completely mated.

c. The position switch is not in place. adjust the position of the limiting sheet of it.

d. The deflation valve is not closed tightly and produces leakage. check its valve core (rubber) if it is worn out, polluted or its centre displaced.

c. Check if there is leakage or looseness with every part of the pipeline.

### 2) Bad hot-sealing quality

a. Check if the opening of the packing bag is clean and take care not to let is polluted.

b. Check if the ni-cr tape works properly, if there is short -circuit or circuit-breaking.

3) Failure of the master board

a. The master board inside of the packager should be kept clean, dry and no metal foreign matter on its surface in order not make its interior short-circuited or the procedure confused.

b.No vacuum formed or not hot-sealing done or jump action produced. which is due to being not well plugged of the relative dial snitch' saft or the dial being damaged.

c. Back of strokes on display with the digital display board or no disp lay for action indication, which is caused by the looseness or being not well plugged of the board feet or partial damage of the board.

d. Some shift of the high, middle and low shifts for hot-sealing doesn' s phase become loose or the relay is damaged.

work. the feet of the high, middle and low 4138 relay relative to the middle

10. Packing list

Model&spec.	Unit	Qunty.	
Model dz400/500	set	1	
Product manual	copy	1	
Certificate	copy	1	
Lubricant	bottle	1	
Ni-crtape	pc	1	
			2pcs for single-chamber
7.87in	Screwdriver	pc	2 "+" "-" shape each
7.87in	Monkey wrench	pc	1 none for single-chamber
	Socket head wrench	pc	1
	Input power cable	pc	1
	Receptacle	pc	1
	SS holding disk	pc	2 1pc for single-chamber
Xzd-020	Vacuum pump manual	set	1
	Etc.		
	Powerflu glue	pc	1 none for single-chamber diddo
	Oiler	pc	1
	Printion Case	case	1

Inspector:

Packer

Year Month Day

## DZQ 400/500 vacuum packager

Fig 1 construction

### DZQ 400 . 1D Single-chamber

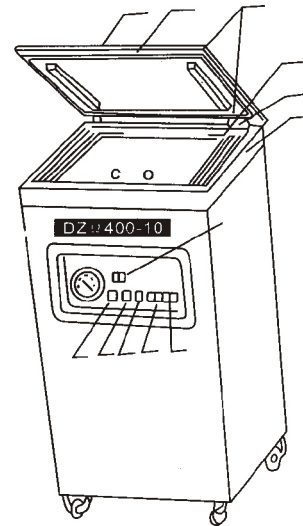
#### 1. External and operation panel arrangement figure:

Part of the vacuum chamber:

- 1) Organic glass cover
- 2) Sealing ring
- 3) Press bar
- 4) Starting weitch (upper, lower contacts)
- 5) Vacuum filling plate
- 6) Vacuum chamber
- 7) Hot-sealing device(upper press bar, lower holder)

Part of thepanel:

- 8) Power selection switch
- 9) Vacuum time selection knlb
- 10) Vacuum manometer
- 11) Time selection button
- 12) Sealing temperature selection button
- 13) Quick stop button
- 14) Time display

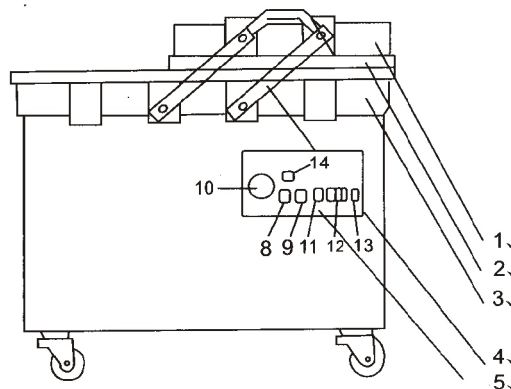


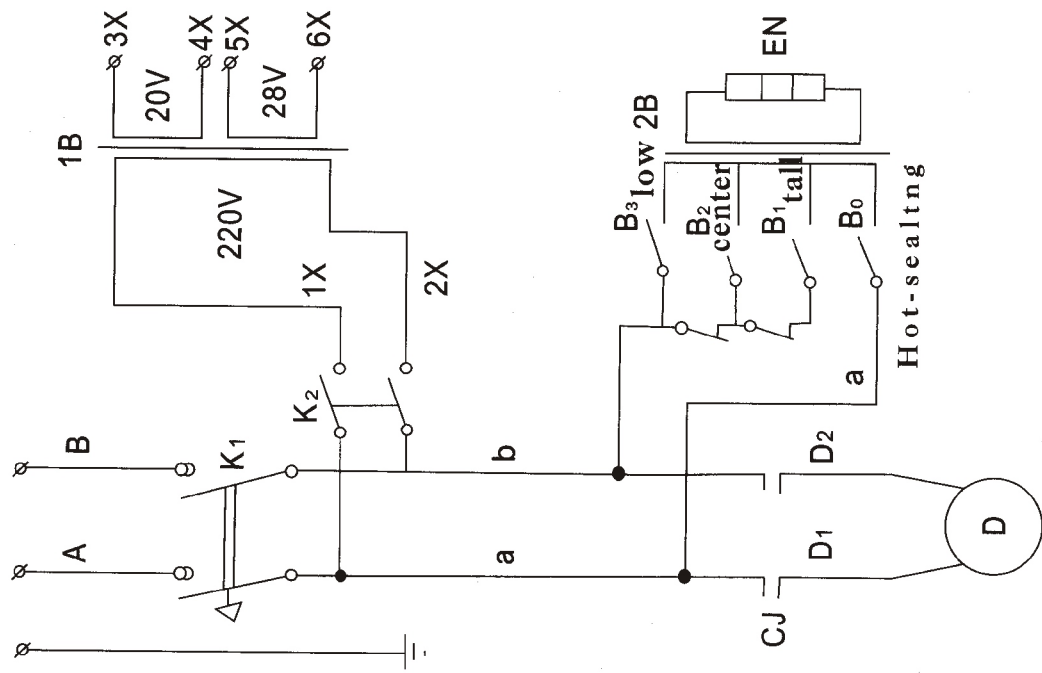
### DZQ 400/500 double-chamber

#### 1 External and operation panel arrangement figure

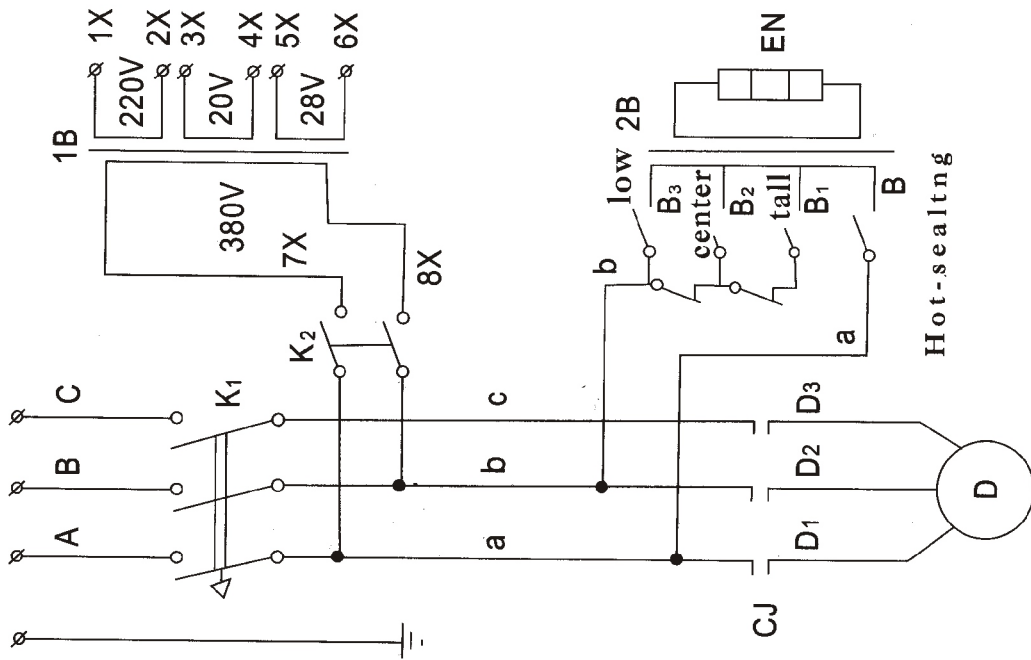
Fig, 1 construction

- 1.Upper working chamber
- 2.Sealing reing
- 3.Lower working chamber
- 4.Swing rod
- 5.Control panel





electric principle 220V



380V

